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CHINA.

IMPERIAL MARITIME CUSTOMS.

III.—MISCELLANEOUS SERIES: No. 6.



LIST OF THE CHINESE LIGHTHOUSES, LIGHT-VESSELS, BUOYS, AND BEACONS

FOR

1891.

(Corrected to 1st December 1890.)



NINETEENTH ISSUE.

PUBLISHED BY ORDER OF
The Inspector General of Customs.

SHANGHAI:

PUBLISHED AT THE STATISTICAL DEPARTMENT OF THE INSPECTORATE GENERAL OF CUSTOMS,
AND SOLD BY

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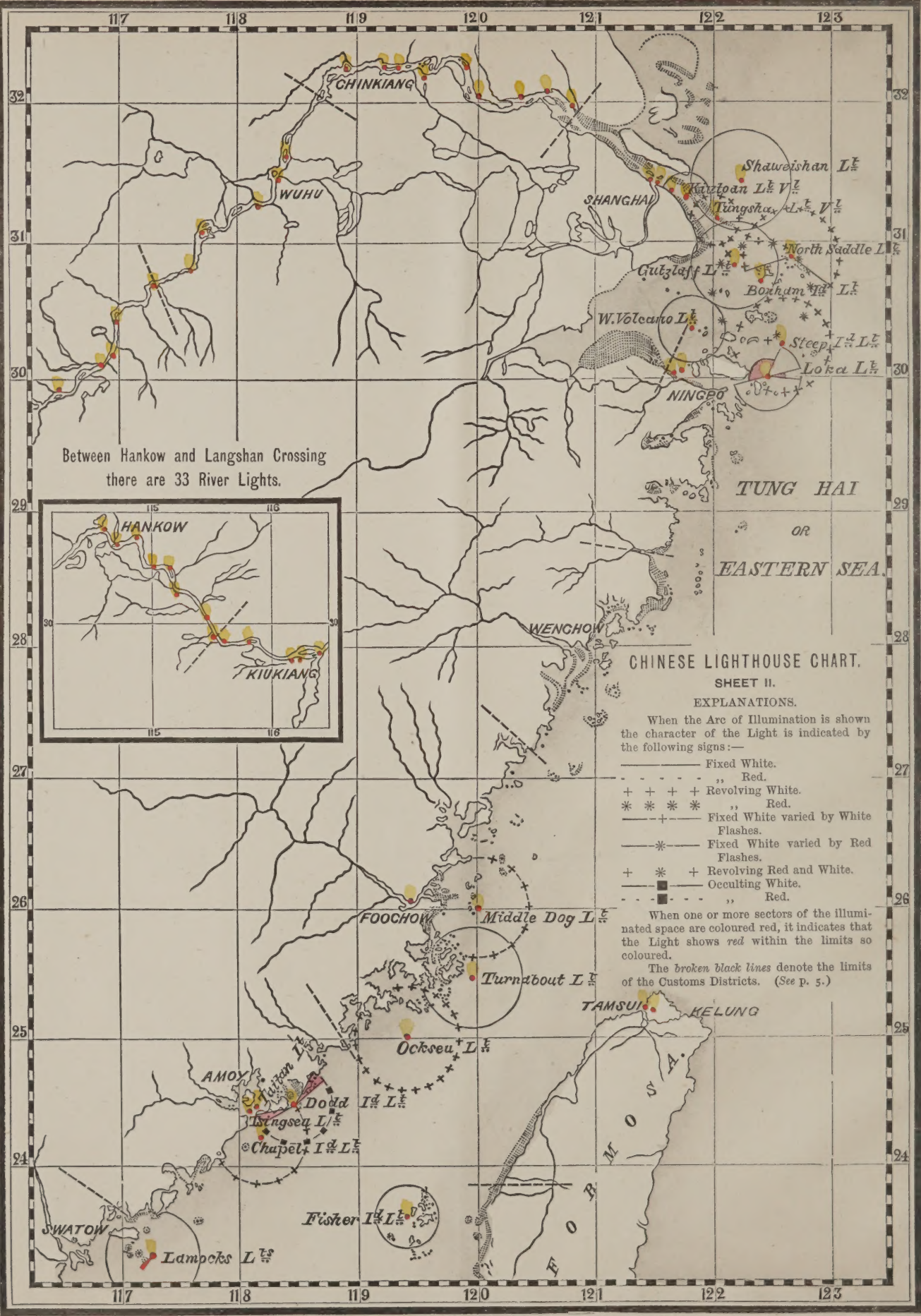


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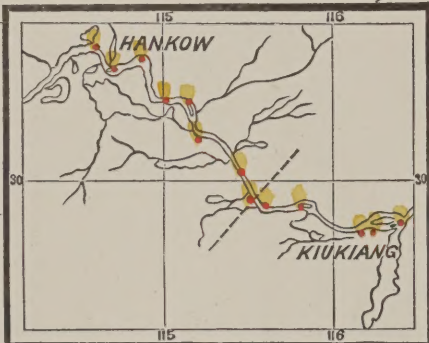


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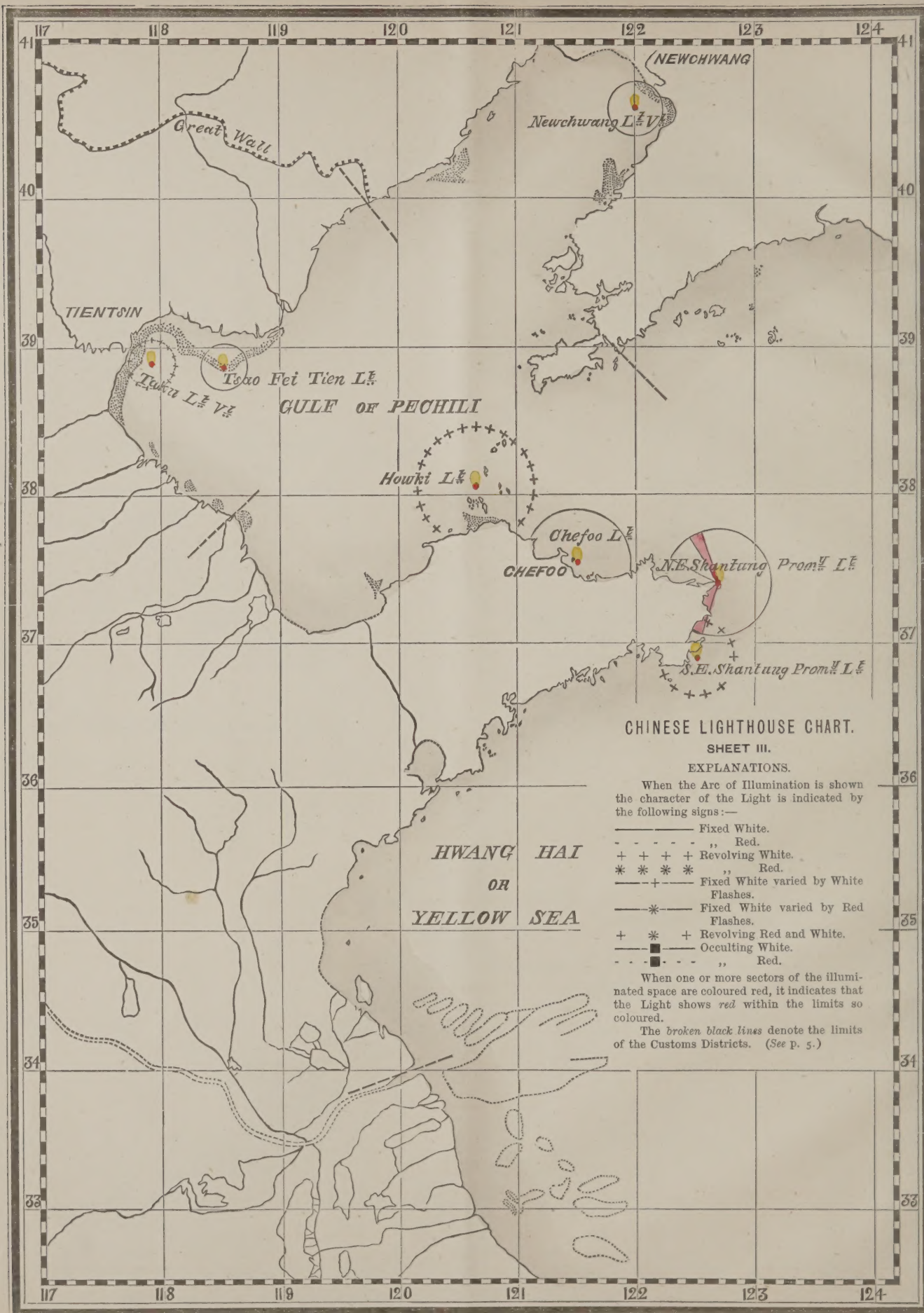


Between Hankow and Langshan Crossing
there are 33 River Lights.



CHINESE LIGHTHOUSE CHART.
SHEET II.

- EXPLANATIONS.
- When the Arc of Illumination is shown
the character of the Light is indicated by
the following signs:—
- Fixed White.
 - - - Red.
 - + + + + Revolving White.
 - * * * * " Red.
 - + - + Fixed White varied by White
Flashes.
 - * - * Fixed White varied by Red
Flashes.
 - + * + Revolving Red and White.
 - Occulting White.
 - ■ - " Red.
- When one or more sectors of the illu-
minated space are coloured red, it indicates that
the Light shows red within the limits so
coloured.
- The broken black lines denote the limits
of the Customs Districts. (See p. 5.)



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ABBREVIATIONS AND EXPLANATIONS.

LIGHTS.

- F. Fixed ; only a fixed or steady light being visible.
- F. & Fl. Fixed and Flashing ; a fixed light being always visible, which is intensified by flashes at the intervals stated.
- Rev. Revolving ; the light gradually increases to full effect and then gradually decreases to total eclipse at the intervals given, which are from centre to centre of the maximum brilliancy.
- Occ. Occulting ; when, for the periods stated, a fixed or steady light is shown, followed by a more or less sudden eclipse.
-

ILLUMINATING APPARATUS.

- C. Catoptric, or by metallic reflectors.
- D. Dioptric, or by lenses and prisms.
- Ord. Order, or class of apparatus, numbered from the first (or most powerful) to the sixth order.
-

The bearings are magnetic, and are given from seaward.

The given distances, from which the lights should be visible in clear weather, are calculated for an observer at a height of 15 feet above the sea ; the elevation of the lights being in all cases taken as above high water.

In several cases, however, when the light is not powerful enough to carry to the distance calculated from its height, a reduced range has been given.

The coloured lights are specially noted in *italics* in the column for remarks, all others being white.

The lights are exhibited from sunset to sunrise.

Longitude is given in degrees, minutes, and seconds east of Greenwich. The miles given are nautical miles, or minutes of latitude. Except in certain specified cases, the positions given are only approximate ones.

The light-vessels and lighthouses are provided with both Codes of Signals, but it is advisable to use the Commercial Code.

Banks of rivers are spoken of geographically, *i.e.*, as *right* or *left* to a person facing *down* the stream.

* * * Should Pilots or Commanding Officers of vessels detect or suspect that any movable mark has changed from its latest advertised position, they are requested to report such change without delay to the Harbour Master of the district concerned.

DESCRIPTION OF THE LIMITS OF CUSTOMS DISTRICTS.

The Pakhoi Customs District includes the coast line of China from the Tungking frontier to Waichow (Guiechow) Island.

The Kiungchow (Hoihow) Customs District includes the Hainan coast, and from Waichow (Guiechow) Island to Hai-ling-shan.

The Canton Customs District extends (for matters affecting the Marine Department) from Hai-ling-shan, $111^{\circ} 45'$ E. longitude, to 114° E. longitude.

The Swatow Customs District includes that part of the coast which is situated between Mirs Point and the Lamocks.

The Amoy Customs District extends from the Lamocks north to Chinchew, inclusive.

The Taiwan (Takow) Customs District comprises the south and southern half of the west coast of Formosa.

The Tamsui Customs District comprises the north and northern half of the west coast of Formosa.

The Foochow Customs District extends from Chinchew north to Namkwan.

The Wênchow Customs District includes the coast from Namkwan to T'aichow.

The Ningpo Customs District extends from T'aichow north to Hangchow Bay.

The Shanghai Customs District extends from Hangchow Bay along the coast as far as the old mouth of the Yellow River, latitude 34° N., and up the Yangtze to the Langshan Crossing.

The Chinkiang Customs District comprises the Yangtze from the Langshan Crossing to Nanking.

The Wuhu Customs District includes the river from Nanking to Nganking.

The Kiukiang Customs District comprises the river from Nganking to the gorge west of Kiukiang.

The Hankow Customs District extends from the gorge west of Kiukiang to Yoehow, at the mouth of the Tungting Lake.

The Ichang Customs District extends from the Tungting Lake to the gorge above Ichang.

The Chefoo Customs District includes the coast line from the old mouth of the Yellow River to the Ta-tsin-ho.

The Tientsin Customs District extends from the Ta-tsin-ho to the Shan-hai-kwan.

The Newchwang Customs District extends from the Shan-hai-kwan to Newchwang and from Newchwang south to Ta-lien-wan.

** * The Limits of the Customs Districts are shown approximately on the Charts at the beginning of this volume by broken lines cutting the Coast or the Yangtze River.*

SYSTEM OF COLOURING BUOYS AND BEACONS IN CHINESE WATERS.

BUOYS.

No.	COLOUR OF BUOY.	DIRECTIONS AND EXPLANATIONS.
1	Red	Entering the channel from seaward, <i>red</i> buoys will be found on the <i>starboard</i> side of the channel, and must be left on the <i>starboard</i> hand by vessels passing in.
2	Black	Entering the channel from seaward, <i>black</i> buoys will be found on the <i>port</i> side of the channel, and must be left on the <i>port</i> hand by vessels passing in.
3	Red and black horizontal bands.	Buoys painted in <i>red</i> and <i>black horizontal bands</i> will be found in the fairway, and should be passed close-to.
4	Red and black vertical stripes.	Buoys painted in <i>red</i> and <i>black vertical stripes</i> will be found on the ends of spits, and the outer and inner extremes of banks, shoals, or extensive reefs, where there is a navigable channel on either side of such spit, bank, shoal, or reef. Vessels should never attempt to pass between a buoy thus painted and the danger which it marks.
5	Red and black chequers	Buoys painted in <i>red</i> and <i>black chequers</i> will be used to mark rocks in the open sea, also to mark obstructions of small extent having channels on either side of them. When used for the latter purpose they will be placed to seaward of the danger. Vessels should never attempt to pass between a buoy thus painted and the danger which it marks.
6	Red and white chequers	When <i>two chequered buoys</i> of these colours are used to mark an obstruction, the <i>red</i> and <i>white</i> one is to mark the <i>starboard</i> side of the channel, and must be left on the <i>starboard</i> hand by vessels passing in; and the <i>black</i> and <i>white</i> one is to mark the <i>port</i> side of the channel, and must be left on the <i>port</i> hand by vessels passing in.
7	Black and white chequers	
8	Wreck buoys	Wrecks will in all cases be marked by <i>green</i> buoys, having the word WRECK painted on them in <i>white</i> letters, and when a wreck lies in the open sea or in a position where there is a navigable channel with plenty of room on either side of it, the buoy will carry no other distinguishing mark, and will in every such case be placed to seaward of the wreck. Wreck buoys marked with an <i>even</i> number must be left on the <i>starboard</i> hand by vessels entering from the sea. Wreck buoys marked with an <i>odd</i> number must be left on the <i>port</i> hand by vessels entering from the sea. The numbers on wreck buoys will be painted in <i>white</i>, and placed above the word WRECK.

Note.—All other distinguishing marks to buoys will be in addition to the foregoing, and where such are employed, a particular description of the same will in each case be given in the published List.

Each buoy will have an iron plate fastened on its outside, in some convenient place above the water-line, with the name of its district and station as given in the published List stamped thereon in English and Chinese, to insure its identification if found adrift.

BEACONS.

No.	COLOUR OF BEACON.	DIRECTIONS AND EXPLANATIONS.
1	Red	Entering the channel from seaward, <i>red</i> beacons will be found on the <i>starboard</i> side of the channel, and must be left on the <i>starboard</i> hand by vessels passing in.
2	Black	Entering the channel from seaward, <i>black</i> beacons will be found on the <i>port</i> side of the channel, and must be left on the <i>port</i> hand by vessels passing in.
3	Red and black vertical stripes.	Beacons painted in <i>red</i> and <i>black vertical stripes</i> will be used to mark spits and the outer and inner extremities of banks, shoals, or extensive reefs, where there is a navigable channel on either side of such spit, bank, shoal, or reef.
4	Red and black chequers	Beacons painted in <i>red</i> and <i>black chequers</i> will be used to mark rocks in the open sea, also to mark rocks of small extent having channels on either side of them.
5	Red and white chequers	When two <i>chequered beacons</i> of these colours are used to mark a rock or reef, the <i>red</i> and <i>white</i> one is to mark the <i>starboard</i> side of the channel, and must be left on the <i>starboard</i> hand by vessels passing in; and the <i>black</i> and <i>white</i> one is to mark the <i>port</i> side of the channel, and must be left on the <i>port</i> hand by vessels passing in. <i>Note.</i>—It is to be understood that the above rules for painting beacons apply in each case to the body of the structure. When a beacon which is painted a single colour, either black or red, is surmounted by a distinguishing mark, such mark may be painted the same colour as the body of the beacon or with that colour and white combined, or white alone. When the body of a beacon is painted in two colours, the same colours only may be used to paint the mark by which it is surmounted. Whenever a distinguishing mark is used, a particular description of it will be given in the published List.
6	Black and white chequers	
	Various	Beacons on shore, to enable bearings to be taken or to give lines of direction for crossing bars or entering rivers, harbours, etc., will be painted so as to make them as conspicuous as possible. Red, black, and white will be the only colours used, and a particular description of such marks will be given in the published List.

LIGHTS.

No.	District.	Name of Light.	Location.	Latitude N.	Longitude E.	Fixed, Fixed & Flashing, Re- volving, Occulting.	Intervals between the Flashes.	Miles seen in clear Wea- ther.
1, 2	Canton	Dutch Folly North Beacons.	On rocks near Dutch Folly Island, north side of the channel.	.....	.....	F.	.....	2
3	do.	Dutch Folly South Beacon.	On rocks near Dutch Folly Island, south side of the channel.	.....	.....	F.	.....	1
4, 5	do.	Taishek Barrier Bea- cons.	On the north side of the Barrier Channel, Blenheim Passage.	.....	.....	F.	.....	1
6	do.	Taimei Beacon	On the end of sandspit off 49th Point, Marines Island, Blenheim Passage.	.....	.....	F.	.....	1
7	Swatow.....	Breaker Point	On the point	*22° 56' 24".5	*116° 29' 43".8	Occ.	8 seconds light and 2 seconds eclipse.	19
8	do.	Cape of Good Hope...	On the cape.....	†23° 14' 19".3	†116° 48' 24"	F. & Occ.	.....	15 white, 8 red.
9	do.	Sugar Loaf	On the eastern end of the summit of island.	23° 19' 54"	116° 45' 32"	F. & Fl.	½ minute	8
10	do.	Lamoeks	Summit of High Island	†23° 15' 42".7	†117° 17' 4".5	F.	.....	22
11	do.	do.	Southern slope of High Island.....	.....	.....	F.	.....	8
12	Amoy.....	Chapel Island	Summit of island.....	†24° 9' 49".1	†118° 13' 30"	F. & Fl.	½ min ute	22
13	do.	Tsingseu Island.....	On the northern slope of the island	†24° 21' 58".1	†118° 7' 26".3	F.	.....	15 white, 8 red.

* Geographical position furnished by Lieut. PIRIE, R.N., H.B.M.S. *Rambler*.† " " " " Commander W. U. MOORE, R.N., H.B.M.S. *Rambler*.

LIGHTS.

Colour, or any Peculiarity of Light-tower.	Height in Feet of Centre of Light above HW	Height in Feet of Building from Base to Vane.	Year lighted.	Character and Order of Illuminating Apparatus.	REMARKS.	No.
Round, granite beacons, painted red, and sur- mounted by a lantern.	15	26	1859	Unclassed ...	Two <i>red</i> lights on the northern side of the channel, Dutch Folly Pass.	1, 2
Round, stone and brick beacon, painted black, and surmounted by a lantern.	10	22	1859	do. ...	A <i>green</i> light on the southern side of the channel.....	3
Spar beacons, painted red, white, and red, and surmounted by a circular frame.	24	46	1872	do. ...	Two <i>red</i> lights to mark the deepest water over the barrier...	4, 5
Spar beacon, painted black, white, and black, and surmounted by a square frame.	21	42	1872	do. ...	A <i>white</i> light to mark the south-east edge of sandspit.....	6
Round, black and white horizontal bands.	152½	120	1880	D. 1st Order	<i>White</i> from S. 55° W. round by W. to N. 53° E., and <i>red</i> inshore of both these bearings as far as the land. The keepers at this lighthouse on hearing a bell, fog horn, steam whistle, or any other sound, during foggy or thick weather, which shall indicate the proximity of a vessel, will fire 2 guns with an interval of 10 seconds between them, and, if the vessel's fog signal is still heard, will repeat the firing after a space of 10 minutes.	7
Round, white	171	22	1880	D. 4th Order	<i>Fixed red</i> from S. 32° E. to S. 10° E.; <i>fixed white</i> , eclipsed for about 3 seconds every minute, from S. 10° E. round by S. and W. to N. 8½° E.; and <i>fixed red</i> , eclipsed for about 3 seconds every minute, from N. 8½° E. till it is shut in by Ma-urh Point. The keepers at this lighthouse on hearing a bell, fog horn, steam whistle, or any other sound, during foggy or thick weather, which shall indicate the proximity of a vessel, will fire 2 guns with an interval of 1 minute between them, and, if the vessel's fog signal is still heard, will repeat the firing after a space of 15 minutes.	8
Round, red	200	21½	1880	D. 6th Order	<i>Fixed white</i> varied by <i>red</i> flashes at ½-minute intervals; visible all round.	9
Round, black.....	241	54	1874	D. 1st Order	Visible all round. The lightkeepers' dwellings and boundary wall are painted white. The keepers at this lighthouse on hearing a bell, fog horn, steam whistle, or any other sound, during foggy or thick weather, which shall indicate the proximity of a vessel, will fire 3 guns with an interval of 2 minutes between the first and second and the second and third, and, if the vessel's fog signal is still heard, will repeat the firing after a space of 12 minutes.	10
No tower.....	55	18	1874	D. 4th Order condensing.	Shows a beam of <i>red</i> light between N. 34½° E. and N. 50½° E., covering the White and Boat Rocks. Outside of this angle of 16° the light gradually wanes on each side of it for 4½°. In clear weather and when a vessel is close to the lighthouse, faint <i>red</i> light is visible beyond the angle of 24½°, between the bearings of N. 30¼° E. and N. 54¾° E. Exhibited from a window in a building painted white.	11
Round, black	227	63	1871	D. 1st Order	Visible all round. The lightkeepers' dwellings and boundary wall are painted white. The keepers at this lighthouse on hearing a bell, fog horn, steam whistle, or any other sound, during foggy or thick weather, which shall indicate the proximity of a vessel, will fire 2 guns with an interval of 3 minutes between them, and, if the vessel's fog signal is still heard, will repeat the firing after a space of 10 minutes.	12
Octagonal, red and white vertical stripes.	130	33	1875	D. 4th Order	<i>Red</i> from N. 1° E. to N. 57° W.; <i>white</i> from N. 57° W. round by W. and S. to S. 50° E.; and <i>red</i> from S. 50° E. to S. 89° E. The lightkeepers' dwellings and boundary wall are painted white.	13

LIGHTS—Continued.

No.	District.	Name of Light.	Location.	Latitude N.	Longitude E.	Fixed, Fixed & Flashing, Re- volving, Occulting.	Intervals between the Flashes.	Miles seen in clear Wea- ther.
14	Amoy.....	Taitan Island.....	On the island, near the northern entrance to Amoy Harbour.	*24° 23' 16".1	*118° 10' 0".6	Occ.	14 seconds light, 2 seconds eclipse, 2 seconds light, 2 seconds eclipse, and so on.	10
15	do.	Dodd Island	Summit of island.....	*24° 25' 43".9	*118° 30' 11".1	Occ.	26 secs. light and 4 seconds eclipse.	18
16	Takow	South Cape.....	About 550 yards north from high water mark at the extreme south point of the South Cape, Formosa.	21° 55' 0"	120° 50' 38"	F.	.....	20
17	do.	Saracen Head	Front of flagstaff near the summit of Saracen Head, at the entrance to Takow Harbour.	22° 36' 14"	120° 16' 0"	F.	.....	10
18	do.	Anping	About 340 yards N.W. by W. from the tree on the top of the mound in Fort Zelandia.	23° 0' 40"	120° 9' 45"	F.	.....	10
19	do.	Fisher Island	S.W. extremity of island.....	23° 32' 53"	119° 28' 5"	F.	.....	15
20	Tamsui	High Bar Light.....	Hill to north of the harbour, about 400 yards S. 86° E. from the Red Fort.	.....	.....	F.	.....	10
21	do.	Low Bar Light.....	Site of old white beacon, about 1,030 yards N. 86° W. from the Red Fort.	.....	.....	F.	.....	6 white.

* Geographical position furnished by Commander W. U. MOORE, R.N., H.B.M.S. *Rambler*.

LIGHTS—Continued.

Colour, or any Peculiarity of Light-tower.	Height in Feet of Centre of Light above HW	Height in Feet of Building from Base to Vane.	Year lighted.	Character and Order of Illuminating Apparatus.	REMARKS.	No.
Iron hut, white.....	300	102½	1863 altd. 1888	D. 6th Order	Visible all round.....	14
Round, white.....	147	79	1882	D. 1st Order	<i>White</i> from S. 51° W. round by W. to N. 62° E.; <i>red</i> from N. 62° E. to N. 74° E.; <i>white</i> from N. 74° E. round by E. to S. 31° W.; and <i>red</i> from S. 31° W. to S. 51° W. The lightkeepers' dwellings and outhouses are painted white. The keepers at this lighthouse on hearing a bell, fog horn, steam whistle, or any other sound, during foggy or thick weather, which shall indicate the proximity of a vessel, will fire 2 guns with an interval of half a minute between them, and, if the vessel's fog signal is still heard, will repeat the firing after a space of 15 minutes.	15
do.	180	71½	1883	do.	<i>White</i> from S. 54° 55' W. round by W. and N. to S. 85° E.; and <i>red</i> from S. 85° E. to S. 28° E. Between the bearings S. 54° 55' W. and S. 86° 28' W., the visibility of the light, owing to the height of the land to the eastward of the lighthouse, will depend upon the distance of the observer from it. With the light bearing S. 54° 55' W., a vessel will need to be between 15 and 20 miles distant in order to see it; but as it is brought to bear more to the westward, it illuminates more of the sea until, on the bearing S. 86° 28' W., it is visible at all distances between the extreme limit of its range and the shore. To the westward and north-westward of the south-west point of Formosa, the light is entirely obscured by the land, between the bearings S. 80° 13' E. and S. 28° E. The lightkeepers' dwellings and boundary wall are painted white. The keepers at this lighthouse on hearing a bell, fog horn, steam whistle, or any other sound, during foggy or thick weather, which shall indicate the proximity of a vessel, will fire 2 guns with an interval of 3 minutes between them, and, if the vessel's fog signal is still heard, will repeat the firing after a space of 8 minutes.	16
Square, white. Lan- tern let into seaward angle of building.	164½	16½	1883	D. 6th Order	Visible from N. 36° W. round by N. and E. to S. 20° 30' E., where the light is shut out by the bluff at the foot of Ape Hill.	17
Iron lattice mast, white.	32½	33½	1882	do.	Position changed in November 1890 to a new site about 1,000 feet in a N.W. by N. direction from its last position. Illuminates the whole sea horizon. During the north-east monsoon vessels may anchor anywhere in from 5½ to 6 fathoms, with the light bearing between N. 50° E. and N. 60° E. During the south-west monsoon the best anchorage will be found in from 6 to 7 fathoms, with the light bearing about N.E. ½ N.	18
Round, black	205	33	1875	D. 4th Order	Visible all round except where obscured by the islands. The lightkeepers' dwellings and boundary wall are painted white. The keepers at this lighthouse on hearing a bell, fog horn, steam whistle, or any other sound, during foggy or thick weather, which shall indicate the proximity of a vessel, will fire 2 guns with an interval of 5 minutes between them, and, if the vessel's fog signal is still heard, will repeat the firing after a space of 10 minutes.	19
Round, white.....	142	35	1888	D. 6th Order	The high light shows a <i>white</i> light from S. 52° E. round by E. to N. 68½° E. The low light shows <i>green</i> from S. 59° E. to S. 84° E., <i>white</i> from S. 84° E. to N. 86° E., and <i>red</i> from N. 86° E. to N. 61° E. The two <i>white</i> lights, when kept in line, indicate the best channel for crossing the Bar when the Bar is in its normal state.	20
Square hut on the top of a square iron frame- work. All white.	33	45	1888	do.		21

LIGHTS—*Continued.*

No.	District.	Name of Light.	Location.	Latitude N.	Longitude E.	Fixed, Fixed & Flashing, Re- volving, Occulting.	Intervals between the Flashes.	Miles seen in clear Wea- ther.
22	Foochow	Ockseu	Summit of High Island	*24° 59' 36".3	*119° 27' 7"	Rev.	1 minute	24
23	do.	Turnabout.....	Summit of island	*25° 26' 10".4	*119° 56' 6".8	F.	.....	23
24	do.	Middle Dog	N.E. extremity of Middle Dog Island.	*25° 58' 10".3	*119° 59' 2".1	F. & Fl.	½ minute	23
25	do.	Pagoda Rock	On the rock in the Pagoda Anchor- age.	.....	.....	F.	.....	1
26	Ningpo	Square Island	Summit of island	29° 59' 21"	121° 45' 22"	F.	.....	9
27	do.	Tiger Island	do. do.	29° 57' 41"	121° 43' 49"	F.	.....	5
28	Ningpo and Shanghai.	Loka Island.....	North point of the island	29° 58' 15"	122° 27' 20"	F.	.....	15 white, 7½ red.
29	Shanghai and Ningpo.	Steep Island	Summit of island	*30° 12' 42".2	*122° 35' 20".1	Rev.	½ minute	22

* Geographical position furnished by Commander W. U. Moore, R.N., H.B.M.S. *Rambler*.

LIGHTS—Continued.

Colour, or any Peculiarity of Light-tower.	Height in Feet of Centre of Light above HW	Height in Feet of Building from Base to Vane.	Year lighted.	Character and Order of Illuminating Apparatus.	REMARKS.	No.
Round, black.....	286	64	1874 altd. 1875	D. 1st Order	The lightkeepers' dwellings and boundary wall are painted white. The keepers at this lighthouse on hearing a bell, fog horn, steam whistle, or any other sound, during foggy or thick weather, which shall indicate the proximity of a vessel, will fire 3 guns with an interval of 2 minutes between the first and second and second and third, and, if the vessel's fog signal is still heard, will repeat the firing after a space of 12 minutes.	22
do.	257	54	1873	do.	Visible all round. The lightkeepers' dwellings and boundary wall are painted white. The keepers at this lighthouse on hearing a bell, fog horn, steam whistle, or any other sound, during foggy or thick weather, which shall indicate the proximity of a vessel, will fire 2 guns with an interval of 3 minutes between them, and, if the vessel's fog signal is still heard, will repeat the firing after a space of 10 minutes.	23
Round, white	257	64	1872	do.	Visible from S. 70° E. round by S. and W. to N. 40½° E. From S. 70° E. round by E. to N. 40½° E. the light is obscured by the Tongsha and Middle Dog Islands, except from S. 89° E. to N. 81½° E., and from N. 61½° E. to N. 57° E., where the light is also visible. The lightkeepers' dwellings and boundary wall are painted white. The keepers at this lighthouse on hearing a bell, fog horn, steam whistle, or any other sound, during foggy or thick weather, which shall indicate the proximity of a vessel, will fire 3 guns with an interval of 2 minutes between the first and second and second and third, and, if the vessel's fog signal is still heard, will repeat the firing after a space of 15 minutes.	24
Iron pile surmounted by a cage, painted red.	16	28	1871	Unclassed ...	Red, visible all round.....	25
Octagonal, white	123	33	1865 altd. 1872	D. 5th Order	Visible all round. A 5 cwt. fog bell is sounded once in fogs at 15-second intervals.	26
Octagonal, red and white vertical stripes.	148	30	1865 altd. 1872	D. 6th Order	Red, visible all round. A gong is sounded in fogs, five times in quick succession, at intervals of about 1 minute. The lightkeepers' dwellings are painted in red and white vertical stripes.	27
White.....	128	.....	1890	D. 4th Order	White from N. 14° 30' W. to N. 86° W. In this sector there are two small obscurations caused by islands to the S.S.E. of Loka, the light being invisible between N. 17° 30' W. and N. 19° 50' W. and between N. 23° W. and N. 26° W. Red from N. 86° W. to S. 78° 30' W.; white from S. 78° 30' W. to S. 25° W.; red from S. 25° W. round by S. to S. 89° 45' E.; white from S. 89° 45' E. to N. 77° E. From N. 77° E. round by N. to N. 14° 30' W. the light is entirely obscured by Loka Island.	28
Round, black	243	47	1883	D. 3rd Order	Between the bearings N. 20° 54' E. and N. 41° 17' E. the light is obscured by Tripod Island, and to the eastward and south-eastward of Video and the Fisherman's Group it is not visible between N. 88° 39' W. and N. 57° 41' W. To the westward and north-westward of Hall Island and Hewett Islands it is also obscured between S. 82° 13' E. and S. 63° 35' E., with the exception of a ray between the bearings S. 65° 53' E. and S. 64° 39' E. The keepers at this lighthouse on hearing a bell, fog horn, steam whistle, or any other sound, during foggy or thick weather, which shall indicate the proximity of a vessel, will fire 3 guns with an interval of 3 minutes between the first and second and second and third, and, if the vessel's fog signal is still heard, will repeat the firing after a space of 10 minutes.	29

LIGHTS—Continued.

No.	District.	Name of Light.	Location.	Latitude N.	Longitude E.	Fixed, Fixed & Flashing, Re- volving, Occulting.	Intervals between the Flashes.	Miles seen in clear Weather.
30	Shanghai ...	West Volcano	Summit of island	*30° 20' 50".1	*121° 51' 25"	F.	.....	15
31	Shanghai and Ningpo.	Bonham Island.....	Southern shoulder of island	*30° 36' 56"	*122° 25' 5"	Rev.	$\frac{1}{2}$ minute	22
32	Shanghai ...	Gutzlaff.....	Summit of island	*30° 48' 36".8	*122° 10' 11".6	F.	.....	20
33	do. ...	North Saddle	N.E. extremity of island.....	*30° 51' 41".4	*122° 40' 16".6	Rev.	1 minute	24
34	do. ...	Tungsha.....	Light-vessel on S.W. part of Tungsha Bank, in $3\frac{1}{2}$ fathoms water, with Gutzlaff Lighthouse bearing S. 23° 13' E., Shaweishan Island N. 37° 10' E.	31° 8' 6"	122° 0' 52"	Rev.	$\frac{1}{2}$ minute	11

* Geographical position furnished by Commander W. U. MOORE, R.N., H.B.M.S. Rambler.

LIGHTS—Continued.

Colour, or any Peculiarity of Light-tower.	Height in Feet of Centre of Light above HW	Height in Feet of Building from Base to Vane.	Year lighted.	Character and Order of Illuminating Apparatus.	REMARKS.	No.
Round, black	93	33	1872	D. 4th Order	Visible all round. The lightkeepers' dwellings are painted white. The keepers at this lighthouse on hearing a bell, fog horn, steam whistle, or any other sound, during foggy or thick weather, which shall indicate the proximity of a vessel, will fire 2 guns with an interval of 5 minutes between them, and, if the vessel's fog signal is still heard, will repeat the firing after a space of 10 minutes.	30
Round, red and white horizontal bands.	237	47	1883	D. 3rd Order	Alternate <i>red</i> and <i>white</i> flashes. Between the bearings S. 14° 41' W. and S. 47° 30' W. the light is obscured by the high land of Bonham Island, and to the northward and eastward of Elliot, Raffles, and Senhouse Islands it is also obscured from S. 12° 2' E. to S. 82° 16' W., with the exception of rays between S. 11° 24' E. and S. 10° 36' E., between S. 2° 21' E. and S. 0° 44' E., between S. 1° 31' W. and S. 3° 19' W., and between S. 50° 5' W. and S. 60° 11' W. The keepers at this lighthouse on hearing a bell, fog horn, steam whistle, or any other sound, during foggy or thick weather, which shall indicate the proximity of a vessel, will fire 2 guns with an interval of 1 minute between them, and, if the vessel's fog signal is still heard, will repeat the firing after a space of 8 minutes. <i>Danger.</i> —Vessels should pass half a mile outside of the small islet, represented on British Admiralty Chart No. 1,199 as lying a little more than 1½ cables to the westward of Bonham Island, in order to avoid its outlying rocks, which are covered from 1 to 2 fathoms at low water.	31
No tower, white lantern.	270	24	1869	do.	Visible all round. Telegraph station. The keepers at this lighthouse on hearing a bell, fog horn, steam whistle, or any other sound, during foggy or thick weather, which shall indicate the proximity of a vessel, will fire 3 guns with an interval of 2 minutes between the first and second and second and third, and, if the vessel's fog signal is still heard, will repeat the firing after a space of 15 minutes.	32
Upper part black, lower white.	273	54	1870	D. 1st Order	Visible from N. 52° W. round by W. and S. to N. 73° E. The remaining angle is chiefly obscured by the Saddle and Parker groups of islands. The lightkeepers' dwellings are painted white. The keepers at this lighthouse on hearing a bell, fog horn, steam whistle, or any other sound, during foggy or thick weather, which shall indicate the proximity of a vessel, will fire 3 guns with an interval of 1 minute between the first and second and 5 minutes between the second and third, and, if the vessel's fog signal is still heard, will repeat the firing after a space of 10 minutes.	33
Red, one mast with black ball.	40	.....	1855 altd. 1871	C.	"TUNGSHA" on her sides. A gun will be fired when vessels are seen running into danger, and the course that should be steered will be signalled by the Commercial Code. In foggy weather a steam horn will be sounded at intervals of 10 seconds. When necessary to lower the light for trimming, a small <i>white</i> light will be hoisted, and a flash-light burned; and, in order to show the direction in which the light-vessel is riding, a <i>white</i> riding-light will be exhibited from sunset to sunrise from the fore-stay, at a height of 6 feet above the rail. If the light-vessel be driven from her proper position to one where she is of no use as a guide to shipping, the usual light will not be shown, but a <i>fixed red</i> light will be exhibited at each end of the vessel; the ball will be struck as soon as possible, and till struck it will be surmounted by a red flag.	34

LIGHTS—Continued.

No.	District.	Name of Light.	Location.	Latitude N.	Longitude E.	Fixed, Fixed & Flashing, Re- volving, Occulting.	Intervals between the Flashes.	Miles seen in clear Wea- ther.
35	Shanghai.....	Shaweishan.....	Summit of island	31° 25' 27"	122° 14' 42"	F.	.....	22
36	do. ...	Kiutoan.....	Light-vessel in 3½ fathoms water, on the S.W. edge of the Block- house Shoal. Kiutoan Beacon bears S. 71° W., distant 3½ miles.	.....	.....	F.	.....	11
37	do. ...	Kiutoan Small Beacon	On the south bank of the Yangtze, 5 miles N.W. of the old Kiutoan Lighthouse.	31° 19' 10"	121° 39' 9"	F.	.....	5
38	do. ...	Lismore Wreck Light- boat.	About 500 feet to the northward of the Lismore wreck.	.....	.....	F.	.....	1
39	do. ...	Woosung.....	Left bank of the Woosung River, near Woosung.	31° 23' 18"	121° 29' 36"	F.	.....	12 white, 8 red, 5 green
40, 41	do. ...	Woosung Inner-Bar Lights.	Right bank of the Woosung River	.....	.....	F.	.....	2
42	Chinkiang, Yangtze.	North Tree	On the north bank of the river ...	.....	.....	F.	.....	7
43	do. ...	Cooper Bank.....	do. do. ....	.....	.....	F.	.....	7
44	do. ...	Tung-lo-tu	do. do. ....	.....	.....	F.	.....	7
45	do. ...	Bate Point, or Fish- bourne Island.	On Bate Point .....	.....	.....	F.	.....	7
46	do. ...	Beaver, or Pottinger Island.	On the southern extremity of the island.	.....	.....	F.	.....	7
47	do. ...	Tantu.....	On the south bank of the river, distant 5.62 miles below Silver Island.	.....	.....	F.	.....	7
48	do. ...	Pei-sin-chow.....	Lower (east) end of island, distant 5 miles from Chinkiang.	.....	.....	F.	.....	7
49	do. ...	Bethune Point.....	Upper (west) end of Pei-sin-chow Island.	.....	.....	F.	.....	7
50	do. ...	Mud Fort.....	On a low point on the north bank of the river, marked on some of the British Admiralty charts as Mud Fort, distant from Bethune Point 21 miles.	.....	.....	F.	.....	7

LIGHTS—Continued.

Colour, or any Peculiarity of Light-tower.	Height in Feet of Centre of Light above HW	Height in Feet of Building from Base to Vane.	Year lighted.	Character and Order of Illuminating Apparatus.	REMARKS.	No.
Round, black	229	55	1871	D. 1st Order	Visible all round. The lightkeepers' dwellings are painted white. The keepers at this lighthouse on hearing a bell, fog horn, steam whistle, or any other sound, during foggy or thick weather, which shall indicate the proximity of a vessel, will fire 3 guns with an interval of 5 minutes between the first and second and 1 minute between the second and third, and, if the vessel's fog signal is still heard, will repeat the firing after a space of 15 minutes.	35
Red, one mast with black ball.	35	.....	1878	C.	"KIUTOAN" on her sides. In foggy weather a 10 cwt. fog bell will be struck three double blows in each minute, the interval between the blows of each pair being 5 seconds, and between two successive pairs of blows 15 seconds. When necessary to lower the light for trimming, a small <i>white</i> light will be hoisted, and a flash-light burned; and, in order to show the direction in which the light-vessel is riding, a <i>white</i> riding-light will be exhibited from sunset to sunrise from the fore-stay, at a height of 6 feet above the rail. If the light-vessel be driven from her proper position to one where she is of no use as a guide to shipping, the usual light will not be shown, but a <i>fixed red</i> light will be exhibited at each end of the vessel; the ball will be struck as soon as possible, and till struck it will be surmounted by a red flag.	36
Wooden tripod, black	32	40	1868 altd. 1878	D. 6th Order	Red, visible all round, except on the landward side	37
Junk with one mast and ball.	.....	.....	1877	Unclassed ...	A <i>red</i> light with a <i>white</i> light underneath it. Vessels should not attempt to pass between the light-boat and the wreck.	38
Square, black	50	58	1865 altd. 1872, 1873, 1875, 1878, and 1888.	D. 4th Order	White from the bank of the Yangtze to the north-westward of the lighthouse to S. 14° 30' W.; <i>green</i> from S. 14° 30' W. to S. 57° 20' W.; <i>white</i> from S. 57° 20' W. to S. 70° 50' W.; and <i>red</i> from S. 70° 50' W. to the left (western) bank of the Woosung River.	39
.....	.....	.....	1872	Unclassed ...	A <i>red</i> light on the low bar mark near the river bank, and a <i>white</i> light on the high mark farther inland. See Nos. 44, 45 in list of Beacons.	40, 41
Black, single pole, sur- mounted by wicker ball.	65	73	1868	D. 6th Order	Altered 1873. Position changed 1874, 1884, and 1886. In July 1890 this light was shifted 450 feet N. 50° E. from its last position.	42
do.	51	62	1867	do.	Altered 1873. Position changed 1876, 1880, 1881, 1882, 1883, 1885, and 1887. In July 1888 was shifted 1,500 yards N. 60° E. from its last position.	43
do.	49	59	1871	do.	Altered 1875. Position changed 1877	44
do.	53	63	1867	do.	Altered 1873	45
do.	52	62	1867	do.	Altered 1872. Position changed 1878. In September 1885 this light was shifted about 690 yards S. 11° E. from its last position.	46
do.	75	43	1867	do.	Altered 1875	47
do.	51	64	1871	do.	Altered 1873	48
do.	55	68	1867	do.	Altered 1875. Position changed 1878, 1881, 1883, and 1885. In September 1887 this light was shifted 230 yards N. 5° E. from its last position.	49
do.	55	70	1877	do.	Position changed 1878 and 1881. In April 1890 this light was shifted 720 feet N. 70° E. from its last position.	50

LIGHTS—Continued.

No.	District.	Name of Light.	Location.	Latitude N.	Longitude E.	Fixed, Fixed & Flashing, Re- volving, Occulting.	Intervals between the Flashes.	Miles seen in clear Wea- ther.
51	Chinkiang, Yangtze.	Wade Island.....	On the island, about 4 miles from the lower (north) end.	.....	.....	F.	.....	7
52	do. ...	Wuhu.....	East bank of the river, 3½ miles above Point Morton.	.....	.....	F.	.....	7
53	Kiukiang, Yangtze.	Point Haines.....	On the south (right) bank of the river.	.....	.....	F.	.....	7
54	do. ...	Buckminster Island...	On Chin-tê-chow Island, about 1½ miles from the lower (north) end.	.....	.....	F.	.....	7
55	do. ...	Fitzroy Island.....	On the island, ¾ mile from the lower (east) end.	.....	.....	F.	.....	7
56	do. ...	Tai-tzü-chi.....	On the N.W. side of the Rock Temple.	.....	.....	F.	.....	7
57	do. ...	Kiangloong Wreck Light-boat.	Moored off the left bank of the river, abreast the wreck.	.....	.....	F.	.....	4
58	do. ...	Hen Point.....	On the left bank of the river, opposite Hen Point.	.....	.....	F.	.....	7
59	do. ...	Eagle Island.....	On the right bank of the river, opposite Eagle Island Shoal.	.....	.....	F.	.....	7
60	do. ...	Christmas Island.....	Upper (south) end of island .....	.....	.....	F.	.....	7
61	do. ...	Spencer Rock Light- boat.	Moored immediately below the lower or N.E. ledge of Spencer Rock, in Tung-liu Reach.	.....	.....	F.	.....	7
62	do. ...	Dove Point.....	On the north (left) bank of the river.	.....	.....	F.	.....	7
63	do. ...	N.E. Crossing.....	do. do.	.....	.....	F.	.....	7
64	do. ...	N.E. Crossing Channel Light-boat.	Moored near the lower end of the sand-bank marked on British Admiralty Chart No. 2,695, "Dries at 26 feet."	.....	.....	F.	.....	7
65	do. ...	Point Otter, Lay Island	Lower (east) end of island .....	.....	.....	F.	.....	7
66	do. ...	Kiukiang Rocks.....	On the south (right) bank of the river.	.....	.....	F.	.....	7
67	do. ...	Esbern Snare Wreck	Off the centre of Bund .....	.....	.....	F.	.....	2

LIGHTS—Continued.

Colour, or any Peculiarity of Light-tower.	Height in Feet of Centre of Light above HW	Height in Feet of Building from Base to Vane.	Year lighted.	Character and Order of Illuminating Apparatus.	REMARKS.	No.
Black, single pole, sur- mounted by wicker ball.	52	70	1867	D. 6th Order	Altered 1873.....	51
do.	77	44	1867	do.	Altered 1875.....	52
do.	34	48	1870	do.	Altered 1871. Position changed 1888.....	53
do.	32	46	1870	do.	Altered 1871. Position changed 1883.....	54
do.	32	46	1870	do.	Altered 1871.....	55
do.	26	42	1870	do.	Altered 1871.....	56
One mast with black ball.	25	.....	1873	do.	Altered 1875, 1876, 1883, and 1885. <i>Red</i> . The light-boat is moored abreast the wreck (not over it), to mark the starboard side of the channel for vessels entering from seaward; and it should be passed close-to in order to avoid the wreck. From the wreck Hen Point bears S. 68° E., and Tai-tzü-chi Rock Temple N. 35° E.	57
Grey, single mast.....	35	38½	1870	do.	Altered 1871. Position changed 1882. Discontinued 1883. Re-established in March 1885. <i>White</i> . Visible all round.	58
Black, single pole, sur- mounted by wicker ball.	32	46	1870	do.	Altered 1871. Position changed 1879, 1880, 1882, 1884, and 1886. In May 1887 this light was removed from the island and re-erected on the right bank of the river, opposite its former position.	59
do.	34	48	1870	do.	Altered 1871. Position changed 1873, 1874, 1878, 1880, 1883, 1886, 1887, 1888, and 1889. In June 1890 this light was shifted 136 yards N. 19° W. from its last position.	60
One mast with black ball.	25	.....	1873	do.	Altered 1884. The light-boat is moored at the lower or N.E. ledge of Spencer Rock, to mark the starboard side of the south channel for vessels entering from seaward. Only in position during low stage of the river, viz., from about 1st December to 30th June.	61
Black, single pole, sur- mounted by wicker ball.	32	46	1870	do.	Altered 1871. Position changed 1872, 1873, 1874, 1875, 1878, 1883, 1886, and 1888. In December 1890 this light was shifted 130 yards N. 52° E. from its last position.	62
do.	34	48	1870	do.	Altered 1871. Position changed 1872, 1874, 1875, 1883, and 1888. In December 1890 this light was shifted 83 yards N. 22° E. from its last position.	63
One mast with black ball.	25	.....	1886	do.	The light-boat is moored about 2 miles above N.E. Crossing beacon light, on the north side of the channel at its narrowest part, to indicate the channel when the banks are flooded. Only in position during high stage of the river, viz., from about 1st July to 30th November.	64
Black, single pole, sur- mounted by wicker ball.	34	48	1870	do.	Altered 1871.....	65
Lantern - hut white; light shown from corner.	52	16	1870	do.	Altered 1886. Shows a <i>red</i> sector of light over the rocks, and a <i>white</i> sector in approaching them from above or below.	66
Black, floating frame, surmounted by wicker ball.	6	.....	1875	Unclassed....	<i>Red</i> . Over the wreck; used only during a low stage of the river.	67

LIGHTS—Continued.

No.	District.	Name of Light.	Location.	Latitude N.	Longitude E.	Fixed, Fixed & Flashing, Re- volving, Occulting.	Intervals between the Flashes.	Miles seen in clear Wea- ther.
68	Hankow, Yangtze.	Li-yü-shan	On top of small hill on right bank of river, nearly opposite lower end of shoal known as Hwang- lin-chow.	.....	.....	F.	.....	7
69	do. ...	Low Point.....	On the point .....	.....	.....	F.	.....	7
70	do. ...	Ruined Fort.....	On top of fort .....	.....	.....	F.	.....	7
71	do. ...	Lee Rock	On bluff, about 1 mile above rock .....	.....	.....	F.	.....	4
72	do. ...	Collinson and Hunter Islands Light-boat.	Off lower end of Collinson Island and upper end of Hunter Island.	.....	.....	F.	.....	7
73	do. ...	Collinson Island Light-boat.	Off upper end of Collinson Island .....	.....	.....	F.	.....	7
74	do. ...	Yang-low and Ten- foot Rock Light-boat.	Off the point opposite Yang-low, and on edge of north bank of river opposite Ten-foot Rock.	.....	.....	F.	.....	7
75	do. ...	Gravener Island Light-boat.	Off upper end of Gravener Island .....	.....	.....	F.	.....	7
76	do. ...	Bouncer Island Light-boat.	Off lower end of Bouncer Island...	.....	.....	F.	.....	7
77	Chefoo.....	South-east Shantung Promontory.	On the south-eastern elbow of the South-east Shantung Promon- tory.	36° 54' 0"	122° 31' 45"	Rev.	$\frac{1}{2}$ minute	15 $\frac{7}{10}$
78	do.	North-east Shantung Promontory.	On the N.E. extremity of the North-east Shantung Promon- tory.	37° 24' 0"	122° 42' 0"	F.	.....	22
79	do.	Chefoo Light.....	Kung-tung-tao Island, highest part	37° 34' 10"	121° 32' 15"	F.	.....	22

LIGHTS—Continued.

Colour, or any Peculiarity of Light-tower.	Height in Feet of Centre of Light above HW	Height in Feet of Building from Base to Vane.	Year lighted.	Character and Order of Illuminating Apparatus.	REMARKS.	No.
Light exhibited from top of small pillar standing in front of keeper's quarters,—a two-story grey brick building with a Chi- nese roof.	84	.....	1886	D. 6th Order	The beacon originally standing at Hwang-lin-chow having been removed, in consequence of the washing away of the island on which it stood, the locality is now lighted by this new light, erected on the hill known locally as Li-yü- shan. The light illuminates an arc of 240° , i.e., from N. 40° W. round by W., S., and E. to N. 80° E.	68
A single pole, with ball on top.	43	58	1871	do.	Altered 1872. <i>Red.</i> Visible from S.E. round by S. and W. to N. 15° E.	69
A single pole, with ball on top, extending through roof of house.	31	.....	1873	.....	Visible from N. 25° E. round by N. and W. to S. 35° E.	70
Lantern-hut grey; light shown from corner.	60	.....	1882	D. 6th Order	<i>Red.</i> Altered December 1884	71
One mast and ball	25	.....	1871	do.	Altered 1873. Stationed off the upper end of Hunter Island from about 1st January to 30th June, and off Collinson Island from about 1st July to 31st December.	72
do.	25	.....	1871	do.	Altered 1873. Stationed on north bank from about 1st January to 30th June, and on south bank, to mark cut-off, from about 1st July to 31st December.	73
do.	25	.....	1873	do.	Stationed off the point opposite Yang-low from about 1st July to 31st October, and opposite Ten-foot Rock from about 1st November to 30th June.	74
do.	25	.....	1869	do.	Altered 1873. Position changed as necessary	75
do.	25	.....	1871	do.	Altered 1873. Stationed on north side of spit, to mark cut-off, from about 1st July to 31st December, and on south side from about 1st January to 30th June.	76
Round, red and white horizontal bands.	$96\frac{1}{2}$	$77\frac{1}{2}$	1883	D. 1st Order	The lightkeepers' dwellings and boundary wall are painted white. A first-class siren, giving a blast of 4 seconds duration at intervals of $1\frac{1}{2}$ minutes, will be sounded during thick or foggy weather. <i>Dangers.</i> —Regarding the island which forms the South-east Shantung Promontory, the "China Sea Direc- tory," vol. III, 1874, p. 463, states that:—"Extensive reefs, some detached, border the whole shore, which is of the most dangerous character and should not be passed at less than a mile, except off the western bluff, nor in less than 9 fathoms water."	77
Round, white	220	64	1874	do.	<i>White</i> from S. 62° E. to S. 30° E.; <i>red</i> from S. 30° E. to S. 17° E.; <i>white</i> from S. 17° E. round by S. and W. to N. 21° E.; and <i>red</i> from N. 21° E. to N. 49° E. Between S. $59\frac{1}{4}^{\circ}$ E. and S. $18\frac{1}{4}^{\circ}$ E. the light is seven times ob- scured by peaks; the obscuration between S. 26° $18'$ E. and S. 23° $10'$ E. being caused by Alceste Island. The light- keepers' dwellings and boundary wall are painted white. The keepers at this lighthouse on hearing a bell, fog horn, steam whistle, or any other sound, during foggy or thick weather, which shall indicate the proximity of a vessel, will fire 2 guns with an interval of 1 minute between them, and, if the vessel's fog signal is still heard, will repeat the firing after a space of 10 minutes.	78
Round, white and red horizontal bands.	242	45	1867	C. 1st Order	Visible all round. The keepers at this lighthouse on hearing a bell, fog horn, steam whistle, or any other sound, during foggy or thick weather, which shall indicate the proximity of a vessel, will fire 2 guns with an interval of 5 minutes between them, and, if the vessel's fog signal is still heard, will repeat the firing after a space of 8 minutes.	79

LIGHTS—Continued.

No.	District.	Name of Light.	Location.	Latitude N.	Longitude E.	Fixed, Fixed & Flashing, Re- volving, Occulting.	Intervals between the Flashes.	Miles seen in clear Wea- ther.
80	Chefoo.....	Howki Island	Summit of island	38° 3' 45"	120° 39' 0"	Rev.	½ minute	24
81	Tientsin.....	Tsao-fei-tien	Tsao-fei-tien Island ("Sha-lui-tien").	38° 56' 0"	118° 31' 0"	F.	.....	10
82	do.	Taku	Light-vessel in outer anchorage, and moored in 17 feet of water at low water springs, off Taku Bar.	.....	.....	Rev.	½ minute	11
83	Newchwang	Newchwang	Light-vessel in 5 fathoms water, about 3½ miles W.S.W. from bar of Liao River.	40° 35' 0"	122° 0' 0"	F.	.....	11

LIGHTS—Continued.

Colour, or any Peculiarity of Light-tower.	Height in Feet of Centre of Light above HW	Height in Feet of Building from Base to Vane.	Year lighted.	Character and Order of Illuminating Apparatus.	REMARKS.	No.
Round, black	328½	46½	1882	D. 1st Order	Visible all round. The lightkeepers' dwellings are painted white. The keepers at this lighthouse on hearing a bell, fog horn, steam whistle, or any other sound, during foggy or thick weather, which shall indicate the proximity of a vessel, will fire 2 guns with an interval of 2 minutes between them, and, if the vessel's fog signal is still heard, will repeat the firing after a space of 10 minutes. <i>Note.</i> —The exhibition of this light is discontinued on the 16th December of each year and resumed on the 1st March of the following year.	80
Octagonal, built of brick and stone.	50	45	1886	D. 6th Order	Visible all round. Discontinued from 30th November to 1st March.	81
Red, one mast with black ball.	35	.....	1880 altd. 1887	C.	"TAKU" on her sides. In foggy weather a gong will be sounded at 1-minute intervals. In order to show the direction in which the light-vessel is riding, a <i>white</i> riding-light will be exhibited from sunset to sunrise from the fore-stay, at a height of 6 feet above the rail. This light-vessel is only in position from the opening of the river to the 30th November, on account of ice. If the light-vessel be driven from her proper position to one where she is of no use as a guide to shipping, the usual light will not be shown, but a <i>fixed red</i> light will be exhibited at each end of the vessel; the ball will be struck as soon as possible, and till struck it will be surmounted by a red flag.	82
Red, three masts, with black ball on main- mast only.	40	.....	1867 altd. 1871	C.	"NEWCHWANG" on her sides. A gun will be fired when vessels are seen running into danger, and the course that should be steered will be signalled by the Commercial Code. In foggy weather a steam fog horn will be sounded at intervals of 10 seconds. When necessary to lower the light for trimming, a small <i>white</i> light will be hoisted and a blue light burned; and, in order to show the direction in which the light-vessel is riding, a <i>white</i> riding-light will be exhibited from sunset to sunrise from the fore-stay, at a height of 6 feet above the rail. This light-vessel is only in position from about the 1st April to the 15th November, on account of the ice. If the light-vessel be driven from her proper position to one where she is of no use as a guide to shipping, the usual light will not be shown, but a <i>fixed red</i> light will be exhibited at each end of the vessel; the ball will be struck as soon as possible, and till struck it will be surmounted by a red flag.	83

BUOYS.

DISTRICT NUMBER AND NAME.	MARK.		Depth: Low Water Spring Tides.	NOTE.
	Description.	Position.		
PAKHOL.				
1. Starboard Buoy.....	Red nun buoy, 4½ feet in diameter, surmounted by a black spherical cage.	On starboard side of fairway, entering from seaward, between rows of fish-stakes off the village of Tikok, at the entrance to the anchorage.	21 feet.....	From the buoy, Custom House bears S. 84° E. and Tikok Point S. 32° E. A clear passage, 270 feet wide, exists between these buoys, with not less than 19 feet of water at low water spring tides.
2. Port Buoy.....	Black nun buoy, 4½ feet in diameter, surmounted by a black diamond-shaped cage.	On port side of fairway, entering from seaward, between rows of fish-stakes off the village of Tikok, at the entrance to the anchorage.	18 do.	From the buoy, Custom House bears S. 83° E. and Tikok Point S. 30° E.
3. Harbour Buoy	White and black vertically striped nun buoy, 3½ feet in diameter.	At inner (east) limit of anchorage for foreign vessels.	14 do.	From the buoy, Custom House bears S. 70° E. and Tikok Point S. 64° W. Vessels drawing more than 12 feet should not anchor to the eastward of the buoy.
CANTON.				
1. Dutch Folly North Buoy	Wooden conical-shaped buoy, painted red above water.	Near Dutch Folly Island, Canton River.	8 feet	Marks the western extremity of the channel, northern side, between the rocks, on which the depth of water is 4 feet at low water spring tides. A red light is placed on it from sunset to sunrise.
2. Dutch Folly South Buoy	Wooden conical-shaped buoy, painted black.	do. do.	12 do.	Marks the western extremity of the channel, southern side, between the rocks. Moored close to the northern side of the rock, on which the depth of water is 2 feet at low water spring tides. A green light is placed on it from sunset to sunrise.
3. Macao Fort Rock Buoy	do. do.	On the north-east extremity of Macao Fort Rock.	10 do.	Marks the north-east extremity of Macao Fort Rock. A green light is placed on it from sunset to sunrise. Vessels should pass between this buoy and the Haeshin Rock Buoy.
4. Haeshin Rock Buoy	Wooden conical-shaped buoy, painted red above water.	South-western edge of Haeshin Rock.	10 do.	Marks the south-western edge of Haeshin Rock. A red light is placed on the buoy from sunset to sunrise. Vessels should pass between this buoy and the Macao Fort Rock Buoy.
5. Shamien Rock Buoy....	Wooden conical-shaped buoy, painted in red and black chequers above water.	On the northern extremity of the Shamien Rocks.	12 do.	Marks the northern extremity of Shamien Rocks. A red light is placed on the buoy from sunset to sunrise. Vessels entering should leave this buoy on the port hand when rounding-to to anchor in the harbour.

BUOYS—Continued.

DISTRICT NUMBER AND NAME.	MARK.		Depth: Low Water Spring Tides.	NOTE.
	Description.	Position.		
6. Fa-ti Rock Buoy	Wooden conical-shaped buoy, painted in red and black chequers above water.	On the northern extremity of the rock.	12 feet	A red light is placed on this buoy from sunset to sunrise.
SWATOW.				
1. Dove Rock Whistling Buoy.	Red and black chequered automatic whistling buoy, 10 feet in diameter at the water line.	Off the Dove Rock	4½ fathoms...	Placed about 2 cables from the pinnacle of the Dove Rock, so as to mark the S.E. extremity of the reef.
2. Mud Flat Buoy	Red conical buoy, 6 feet in diameter at the water line, surmounted by a black spherical cage.	Outer edge of mud bank; E. ½ N. of Customs Pier; distant three-quarters of a mile.	2 do. ...	Marks the southern edge of the mud bank on the north side of the harbour.
3. Wyoming Rock Buoy...	Black conical buoy, 6 feet in diameter at the water line, surmounted by a black inverted frustum cage.	Off the rock, Swatow Anchorage	7 do. ...	This buoy is placed about 40 yards N.E. from the rock, on which there is 4 feet of water at low water spring tides.
4. Madras Rock Buoy.....	Black conical buoy, 6 feet in diameter at the water line, surmounted by a black spherical cage.	do. do.	3½ do. ...	This buoy is placed about 40 yards N. by E. from the rock, which has only 6 feet of water on it at low water spring tides.
AMOY.				
1. Coker Rocks East Buoy	Black and white chequered conical buoy, 6 feet in diameter.	Eastward of the Coker Rocks	8 fathoms...	} Vessels should not pass between these buoys.
2. Coker Rocks West Buoy	Red and white chequered conical buoy, 6 feet 5 inches in diameter.	Westward of the Coker Rocks	6¾ do. ...	
3. Brown's Rocks East Buoy.	Black and white chequered conical buoy, 6 feet in diameter, surmounted by a black spherical cage 2 feet in diameter.	Eastward of the Brown's Rocks	12 do. ...	} do. do.
4. Brown's Rocks West Buoy.	Red and white chequered conical buoy, 6 feet in diameter, surmounted by a black spherical cage 2 feet in diameter.	Westward of the Brown's Rocks	6½ do. ...	
5. Harbour Rock Buoy.....	Red and black chequered nun buoy, 3 feet 4 inches in diameter.	On the north-west edge of the Harbour Rock.	22 feet	About 130 fathoms S.W. of Dock Island. Vessels passing inside this buoy should give it a berth of not less than 50 fathoms.
6. Kellett Spit Buoy	Red and black vertically striped conical buoy, 6 feet in diameter.	On the northern end of the Kellett Spit.	22 do.	Vessels should not pass between this buoy and the Island of Kulangsu.
7. Quemoy Spit Buoy.....	Red automatic whistling buoy. The name "QUEMOY" is painted on the buoy in white letters.	Off the south-south-western edge of the spit.	8 fathoms...	10 feet in diameter. In consequence of the extension of the spit the buoy has been moored about 6 cables S. 68° W. from the position it formerly occupied. Vessels should not pass between this buoy and Quemoy Island.

BUOYS—Continued.

DISTRICT NUMBER AND NAME.	MARK.		Depth: Low Water Spring Tides.	NOTE.
	Description.	Position.		
8. Minerva Rock Buoy.....	Black nun buoy, 7 feet 6 inches in diameter. The name "MINERVA" is painted on the buoy in white letters.	To the south-eastward of Minerva Rock (off the extremity of Cass Spit).	4 fathoms...	From the buoy, the summit of Monkey Island bears N. $24\frac{1}{2}^{\circ}$ E., Druid Head (on Kulangsu) bears N. 62° E.; Cornwallis Stone (on Amoy) bears S. 85° E. Vessels should not pass between this buoy and Sungseu Island.
TAMSUI.				
1. Northern Bar-buoy.....	Black conical buoy, 6 feet in diameter.	Northern side of approach to Tamsui Bar.	29 feet.....	Low Bar Light, S. 82° E.; Chinese beacon, N. 57° E.
2. Southern Bar-buoy.....	Red conical buoy, 6 feet in diameter.	Southern side of approach to Tamsui Bar.	22 do.	Low Bar Light, N. 85° E.; Chinese beacon, N. 46° E.
3. Harbour Buoy.....	Red nun buoy, surmounted by a black spherical cage.	On the northern edge of the sandspit at the southern side of the entrance to Tamsui Harbour.	13 do.	Low Bar Light, N. 80° E., about $3\frac{1}{2}$ cables distant.
4. Inflexible Reef Buoy....	Black conical buoy, 4 feet in diameter, surmounted by a black spherical cage.	Inflexible Reef, Kelung Harbour.	60 do.	Image Point, N. 60° W.; Ruin Rock, S. 28° W.
5. Coral Shoal Buoy.....	Red conical buoy, 4 feet in diameter, surmounted by a black spherical cage.	To the eastward of shoal, Kelung Harbour.	30 do.	Image Point, N. 24° W.; Ruin Rock, S. 61° W.
FOOCHOW.				
1. Min Reef Whistling Buoy.	Red and black chequered automatic whistling buoy. The name "MIN" is painted on the buoy in white letters.	Off the northern extremity of Min Reef.	11 fathoms...	10 feet diameter. From the buoy Chang-chi Peak bears N. 49° E.; Sharp Peak bears N. 73° W.
2. Aymar Rock Buoy.....	Red and black chequered buoy, surmounted by a black diamond-shaped cage. The name "AYMAR" is painted on the buoy in white letters.	About 3 cables east of Aymar Rock, entrance to Min River.	9 do. ...	6 feet diameter. Chang-chi Peak bears N. $66^{\circ} 30'$ E.; Middle Dog Lighthouse bears S. $35^{\circ} 15'$ E.; Sea Dog bears S. $55^{\circ} 30'$ E.
3. East Channel Entrance or No. 1 Fairway Buoy.	Red and black horizontally striped fairway buoy, surmounted by a cage.	Entrance to Min River, East Channel.	4 do. ...	10 feet diameter and 18 feet high to top of cage. Sharp Peak bears N. $73^{\circ} 30'$ W.; Black Head bears S. $39^{\circ} 30'$ W.
4. Middle or No. 2 Fairway Buoy.	Red and black horizontally striped fairway buoy, surmounted by a black conical frustum cage.	Entrance to Min River.....	$2\frac{1}{2}$ do. ...	10 feet diameter and 18 feet high to top of cage. Sharp Peak bears N. $65\frac{3}{4}^{\circ}$ W.; Black Head bears S. $23\frac{1}{2}^{\circ}$ W.
5. Inner or No. 3 Fairway Buoy.	Red and black horizontally striped fairway buoy, surmounted by a black cage.	do. do.	$6\frac{1}{2}$ do. ...	10 feet diameter and 18 feet high to top of cage. Sharp Peak bears N. 47° W.; Round Island bears S. 58° W.
6. Eme Rock Buoy.....	Red nun buoy.....	Starboard side of channel, Min River.	$2\frac{1}{4}$ do. ...	Clears Eme Rocks. Sharp Peak Point bears S. 77° E.; Sharp Peak Summit bears N. 12° E.

BUOYS—Continued.

DISTRICT NUMBER AND NAME.	MARK.		Depth: Low Water Spring Tides.	NOTE.
	Description.	Position.		
7. Temple Rock Buoy	Red nun buoy.....	Temple Rock, Min River.....	3½ fathoms...	Marks the southern extremity of the rock.
8. Stone Barrier Buoy.....	Black nun buoy	Close to the northern end of Stone Barrier opposite Temple Point, Min River.	3½ do. ...	Vessels should not pass between this buoy and Wild Duck Bank (West Brother).
9. Spiteful Island Black Buoy.	do.	Port side of channel, Min River.	8 do. ...	Clears the rocks off Spiteful Island.
10. Niu-ta Rock South Buoy	Red and white chequered nun buoy.	On the southern edge of the Niu-ta Rock.	17 feet.....	} Vessels must not pass between these buoys.
11. Niu-ta Rock North Buoy	Black and white chequered nun buoy.	On the northern edge of the Niu-ta Rock.	24 do.	
NINGPO.				
1. Sesostris Rock Buoy ...	Black and red chequers, surmounted by a black cage.	Near the rock in mid-channel	5 fathoms ...	This buoy is placed to the eastward of the rock, on which there is 9 feet of water at low water spring tides.
2. Seaou-yew Spit Buoy ...	Black buoy surmounted by a black cage.	On the end of the mud spit projecting from Seaou-yew Island.	14 feet	Tiger Island Lighthouse bears S. 23° W.; summit of Look-out Hill bears S. 40° E.
SHANGHAI.				
1. Ariadne Rock Whistling Buoy.	Red and black chequered automatic whistling buoy.	About 50 fathoms south of the Ariadne Rock.	33 feet	8 feet in diameter, and 8 feet above the water line. The Ariadne Rock just shows at low water spring tides.
2. Middle Ground Lower Buoy.	Red and black vertically striped buoy, with diamond shaped cage.	Near the outer or south-eastern end of Kiutoan Middle Ground.	19 do.	6 feet diameter, 12 feet high.
3. Middle Ground Upper Buoy.	Red and black vertically striped buoy, triangular cage.	Near the upper or north-western end of Kiutoan Middle Ground.	18 do.	do. do.
4. <i>Lismore</i> Wreck Buoy ...	Green nun buoy, with the word "WRECK" and the numeral "1" painted on it in white.	Immediately below the wreck of the <i>Lismore</i> , in line with the wreck and Woosung Lighthouse.	12 do.	4 feet diameter.
5. Woosung Spit Buoy.....	Red and black vertically striped buoy, with black spherical cage.	On the eastern end of Woosung Spit and starboard side of channel at the entrance to the Woosung River.	17 do.	10 feet diameter, 18 feet high to top of cage.
Yangtze River above Woosung.	6. Tsungming Bank Buoy.	Red buoy with black spherical cage.	On the north side of the channel between Bush and Tsungming Islands.	Uncertain ... 6 feet diameter, 12 feet high. Marks the southern edge of the shoals lying to the S.W. of Tsungming Island.
	7. Dove's Nest Buoy	do. do.	On the edge of the Dove's Nest Shoal (which is a part of the Acteon Shoal), on the starboard side of the channel.	do. ... 6 feet diameter, 11½ feet high.

BUOYS—Continued.

DISTRICT NUMBER AND NAME.	MARK.		Depth: Low Water Spring Tides.	NOTE.
	Description.	Position.		
Yangtze River above Wosung.	8. Triumph Bank Buoy.†	Black buoy with black inverted frustum cage.	On edge of the bank which extends from the southern shore.	Uncertain ... 6 feet diameter, 11½ feet high.*
	9. Actæon Buoy† ...	Red buoy with black spherical cage.	Off the edge of the Actæon Shoal, on the starboard side of the channel.	do. ... do. do. *
	10. Centaur Lower Buoy.†	Black buoy with black spherical cage.	On the south-eastern extremity of the Centaur Shoal.	do. ... do. do. *
	11. Actæon Shoal Upper Buoy.† §	Red and black vertically striped conical buoy, surmounted by a black triangular cage.	Off the north-western end of the Actæon Shoal.	do. ... do. do. *
	12. Middle Bank Buoy.‡	Red and black horizontally striped buoy surmounted by a black spherical cage.	Lower end of the Langshan Crossing.	do. ... do. do. *
	13. North Bank Buoy†	Red buoy with black inverted frustum cage.	To the southward of the south-eastern elbow of the North Bank.	do. ... do. do. *
	14. Langshan Buoy†...	Red buoy with black spherical cage.	Off the edge of the bank forming the north-eastern side of the channel.	do. ... do. do. *
	15. Vine Point Lower Buoy.‡	Red buoy with black conical frustum cage.	do. do.	do. ... do. do. *
	16. Waterman Bank Upper Buoy.‡	Black buoy with black spherical cage.	Off the north-eastern edge of the continuation of the Waterman Bank.	do. ... do. do. *
	17. Vine Point Buoy†	Red buoy with black spherical cage.	Off the north-western edge of the Vine Point Shoal.	do. ... 10 feet diameter, 18 feet high to top of cage.*
	18. North Tree Rocks Buoy.	Red buoy with black inverted frustum cage.	About 100 yards to the southward and westward of the rocks.	do. ... 6 feet diameter, 11½ feet high.
	19. South-east Spit Buoy.§	Black buoy with black spherical cage.	Off the south-eastern end of the Actæon and Dove's Nest Shoals.	do. ... do. do.
	20. Cone Tree Buoy §...	Black conical buoy, surmounted by a black spherical cage.	Off the eastern edge of the Actæon Shoal.	do. ... do. do.
	21. Fairway Buoy §....	Red and black horizontally striped conical buoy, surmounted by a black spherical cage.	A little to the westward of mid-channel.	do. ... do. do.
	22. North-east Actæon Buoy.§	Black conical buoy, surmounted by a black spherical cage.	Off the north-eastern edge of the Actæon Shoal.	do. ... do. do.
	23. Drinkwater Point Buoy	Red and black horizontally striped fairway buoy, with black spherical cage.	In the North Channel	24 feet..... 10 feet diameter, 18 feet high. Shaweishan Lighthouse bears N. 86° E., distant about 12 miles.

* The banks at the Centaur and Langshan Crossings are subject to frequent changes. These parts of the river should therefore be navigated with caution and the lead kept going.

† These four buoys lead over the Centaur Crossing.

‡ These six buoys lead over the Langshan Crossing.

§ These five buoys mark the Harvey Point Channel.

BUOYS—Continued.

DISTRICT NUMBER AND NAME.	MARK.		Depth: Low Water Spring Tides.	NOTE.
	Description.	Position.		
TIENTSIN.				
1. Entrance Buoy*.....	Red iron buoy, surmounted by a black cage.	On the outer edge of Taku Bar, to mark its commencement and the entrance to the channel.	2 feet.	
2. South Buoy*.....	Black iron buoy	On the south side of the bar, to mark a bend in the channel.	4 do.	
3. Inner Buoy*.....	Red iron buoy	On the inner edge of the bar, to mark the inner entrance to the channel.	4 do.	
NEWCHWANG.				
1. Entrance Buoy†	Black conical buoy, sur- mounted by a black frustum cage.	On the south-western extremity of the west bank and outer edge of the bar.	16 feet.	
2. Middle Buoy†.....	Black conical buoy, sur- mounted by a black dia- mond-shaped cage.	On the south edge of the west bank.	8 do.	
3. Inner Buoy†.....	Red nun buoy, surmounted by a red spherical cage.	On the eastern edge of the east bank and inner edge of the bar.	12 do.	

* During the winter months the three iron buoys in the Tientsin district are replaced by spar buoys, painted black.

† From about the 1st November until about the 10th April the three iron buoys in the Newchwang district are replaced by wooden spar buoys, of similar colours, surmounted by black cages fixed on bamboo perches.

BEACONS.

No.	NAME OF DISTRICT AND NAME OF MARK.	POSITION.	DESCRIPTION.	REMARKS.
CANTON.				
1, 2	Dutch Folly North Beacons.	On the rocks near Dutch Folly Island, north side of the channel.	Round granite beacons, 26 feet high, painted red, and surmounted by a lantern.	Two red lights.
3	Dutch Folly South Beacon.	On the rocks near Dutch Folly Island, south side of the channel.	A round stone and brick beacon, 22 feet high, painted black, and surmounted by a lantern.	A green light.
4-6	Taishek Barrier Beacons.	On the northern side of the Barrier, Blenheim Passage.	Spar beacons, 46 feet high, surmounted by a circular frame, and painted red, white, and red.	Two red globe lanterns hoisted to heads of spars.
7	Taimei Beacon.....	On the end of sandspit making out from 49th Point, Marines Island, Blenheim Passage.	Spar beacon, 27 feet 6 inches high, surmounted by a square frame, and painted black, white, and black.	A white globe lantern hoisted to frame.
SWATOW.				
8	Gochang Rock Beacon.	On the rock, Swatow Anchorage	Black, granite beacon, 5 feet in diameter, 5 feet high, and carrying a 5 feet high pole surmounted by a black wicker basket.	The highest of these rocks is covered at high water. From the beacon Gochang Point bears S. 31° E., and is distant about 350 yards; Bottefurh's Rock bears N. 76° E.
AMOY.				
9	Alibi Rock Beacon...	On a rock a little to the N.E. of the northern end of Kulangsu.	Black, granite obelisk, 22 feet high above the rock.	The rock dries at low water.
10	Kangsintah Beacon.	These two beacons mark two reefs of rocks (extending out from Kulangsu) at points where they uncover at $\frac{1}{4}$ ebb.	Black, granite obelisk, 15 feet high above the rock on which it is built.	A rock, covered 14 $\frac{1}{2}$ feet at low water springs, lies N. by E. 40 yards from the southern of these two beacons (Chiotah); and S.E. by E. from the same beacon, distant about 100 yards, is a rocky patch, the centre and shoalest part of which has only 5 feet of water on it at low water springs. From the centre of this patch Alibi Rock Beacon is seen just open to the N.E. of the northern of these two beacons and in line with the west face of Monkey Island. The highest pinnacle of the Coker Rocks is in line with these two beacons, bearing from them about S. 34° E.
11	Chiotah Beacon		Black, granite obelisk, 17 feet high above the rock on which it is built.	
12-24	Harbour Marks.....	On rocks in the Inner Harbour. Three off the northern end of Kulangsu; six on the west side of the Inner Harbour; and four on the east side of the Inner Harbour	13 perches, with round basket tops. The four on the eastern side of the Inner Harbour are painted red; the remaining nine black. The baskets on all the perches are painted white.	The first three mark the northern edges of reefs off the north end of Kulangsu. The next six are on rocks on the western side of the Inner Harbour. The last four are on the eastern side.

BEACONS—Continued.

No.	NAME OF DISTRICT AND NAME OF MARK.	POSITION.	DESCRIPTION.	REMARKS.
TAMSUI.				
25	Bush Island Beacon	On the extreme west end of Bush Island, Kelung Harbour.	Grating, 8 feet by 6 feet, mounted on a single spar 42 feet high. The grating is painted white, the spar is painted black.	
FOOCHOW.				
26	Oriental Rock Beacon.	On Oriental Rock, Kimpai Pass	Spar mounted with a cage, 4 ft. square on the upper and 2 ft. 6 in. on the lower part. Painted red, with the words "ORIENTAL ROCK" in white on the cage. Shows 14 ft. above high water spring tides.	At high water spring tides the rock is covered 4 feet. Vessels must pass to the south of the beacon, and not nearer than 100 feet.
27	Half-tide Rock Beacon.	On the Half-tide Rock, near the upper end of Tongue Shoal.	Built of granite, painted black	The rock is submerged 5 feet at high water springs.
28	Pagoda Rock Beacon	On the rock in the Pagoda Anchorage.	Iron pile surmounted by a cage painted red.	A red light is exhibited from sunset to sunrise. The rock is submerged 10 feet at high water springs.
29	Mamoi Rock Beacon	On Mamoi Rock	Pole with cage painted red	The rock is only covered at high water.
WENCHOW.				
30	Elephant Rock Beacon.	On a small pinnacle rock called "Hsiang-shih" (Elephant Rock), about 600 feet S.E. of the east end of Pagoda Island (Ku-hsü, or, vulgarly, Kiang-sin-sze), which is in the middle of the river opposite the north wall of the city.	The beacon consists of an iron mast 3 inches in diameter, painted red, on which is fixed a bamboo basket 6 feet in diameter, painted red, with a white horizontal band round the centre.	The top of the mast is 15 feet above high water springs. The centre of the basket is 9 feet 6 inches above high water springs. The rock is submerged 8 feet at high water springs.
31, 32	1st Crossing or Lower Anchorage Beacons.	On the right bank of the Ou River, about $1\frac{3}{4}$ miles to the westward of the Lower Anchorage Station.	1. A pole, 36 feet high, surmounted by a bamboo frame 6 feet square. 2. A pole, 26 feet high, surmounted by a pyramidal bamboo frame 6 feet high. The poles are painted in black and white horizontal stripes, and the bamboo frames half black and half white horizontally.	These beacons kept in line should indicate the best channel for crossing to the south-western point of Ch'i-tu-t'u (Big Island).
33, 34	2nd Crossing or Ch'i-tu-t'u Beacons.	* On the south-western end of Ch'i-tu-t'u (Big Island).	1. A pole, 36 feet high, surmounted by a bamboo frame 6 feet square. 2. A pole, 26 feet high, surmounted by a pyramidal bamboo frame 6 feet high. The poles are painted in red and white horizontal stripes, and the bamboo frames half red and half white horizontally.	These beacons kept in line should indicate the best channel between Ch'i-tu-t'u and Yang-fu-shan-t'u.

* The name of one island in the Ou River is incorrectly given in the British Admiralty Chart No. 1,763, latest edition: "Yang-fu-shan-tau or Chi-tu Island" should be Yang-fu-shan-t'u.

BEACONS—Continued.

No.	NAME OF DISTRICT AND NAME OF MARK.	POSITION.	DESCRIPTION.	REMARKS.
35, 36	3rd Crossing or Yang-fu-shan-t'u Beacons.	* On the north-eastern end of Yang-fu-shan-t'u.	1. A pole, 36 feet high, surmounted by a bamboo frame 6 feet square. 2. A pole, 26 feet high, surmounted by a pyramidal bamboo frame 6 feet high. The poles are painted in black and white horizontal stripes, and the bamboo frames half black and half white horizontally.	These beacons kept in line should indicate the best channel between Yang-fu-shan-t'u and the left (northern) bank of the river.
37, 38	4th Crossing or Chiang-t'u Beacons.	On the left (northern) bank of the river, a short distance to the eastward of Chiang-t'u.	1. A pole, 36 feet high, surmounted by a bamboo frame 6 ft. square. 2. A pole, 26 ft. high, surmounted by a pyramidal bamboo frame 6 ft. high. The poles are painted in red and white horizontal stripes, and the bamboo frames half red and half white horizontally.	These beacons kept in line should indicate the best channel between the northern bank of the river and the city.
NINGPO.				
39	Alligator Beacon.....	On Alligator Point, a ledge of rocks extending 2 cables south from the extreme southern end of Kintang Island.	Stone beacon, painted red.....	Long-nose Point bears N. 56½° W.; Just-in-the-way bears S. 87° E.
40	Blonde Rock Beacon	Blonde Rock, in the Kintang Channel.	Iron beacon, with cage, painted black.	Sanshan Islet bears S. 42° E.; Square Island, N. 65° W.; Beacon Hill in one with the citadel, S. 45° W. Rock awash at low water.
41	Tiger's Tail Beacon...	On a rock bearing N. 43° W. from the tower on Tiger Island; distance 210 yards.	Iron beacon, painted black, with a white cage.	Rock awash at half tide.
42	Nemesis Rock Beacon.	On a ledge of rocks extending from the north-eastern point of Tayew Island.	Hard-wood spar, painted red, with an inverted frustum cage, painted white.	Erected by Chinese, but maintained by the Customs.
SHANGHAI.				
43	Kiutoan Beacon.....	South side of entrance to the River Yangtze.	Round black tower, 70 feet high.	Formerly a light was exhibited from this tower, but it was discontinued in April 1878, when the <i>Kiutoan</i> Lightship (Light No. 36 of this publication) was first placed in position. The beacon is of little use as a guide to a stranger.
44, 45	Woosung Inner-Bar Marks.	On the right bank of the Woosung River.	1. A low pole with a pyramidal top near the river bank. 2. A high pole with a rectangular top farther inland.	These poles kept in line lead across the bar in the depth of water which is signalled from the Customs station during daylight. A red light on the low pole and a white light on the high pole indicate the same channel by night.
46	Drinkwater Point Beacon.	South-eastern end of Tsung-ming Island.	Quadrangular open-work structure of wood, 50 feet high, and not painted.	
KIUKIANG.				
47	Lay Island Beacon...	On the island, about 1 mile from the upper (west) end.	A spar beacon, 45 feet above high water, surmounted by a black ball, and painted black and white.	It marks the channel in crossing over from the south to the north bank during the low state of the river in winter.

* The name of one island in the Ou River is incorrectly given in the British Admiralty Chart No. 1,763, latest edition: "Yang-fu-shan-tau or Chi-tu Island" should be Yang-fu-shan-t'u.

BEACONS—*Continued.*

No.	NAME OF DISTRICT AND NAME OF MARK.	POSITION.	DESCRIPTION.	REMARKS.
48	CHEFOO. Fairway Rock Beacon.	On the Fairway Rock, off the north-western point of Yentai Hill.	An iron rod surmounted by a cage.	Rock dries at low water spring tides. Chefoo Peak, N. 4° W.; Sentry Rock, N. 38° E.; Chefoo Lighthouse, N. 85° E.
49	TIENTSIN. Wooden Beacon....	On the north bank, at the mouth of the Peiho.	Pyramid shape, painted white.	
50, 51	North Bank Marks	do. do.	Two poles, 30 feet high, with cages.	
52, 53	South Bank Marks	On the south bank, near the mouth of the Peiho.	do. do.	
54	South Bank Mark	On the south bank, near the C. M. S. N. Co.'s godown.	A board painted one half black, one half white, erected on two poles 20 feet high.	It marks the channel after rounding the No. 3 or Inner Buoy.
55	NEWCHWANG. East Spit Beacon*	On the East Spit, a shoal extending south-westerly from the dry bank of the river.	Red spar, mounted with two red balls; 25 feet above high water.	It marks the western edge of East Spit, on the starboard side of channel. The Whale's Back Shoal, on the opposite side of the fairway, bears about S.W. by W. $\frac{1}{2}$ W. from this beacon.
56	Nodding Tommy Beacon.*	On the east bank of the river, and 1 mile above East Spit Beacon.	Red spar, mounted with a red diamond-shaped box, which has a white band 1 foot wide painted round the middle of it. The spar is 25 feet above high water.	It marks the east bank of the river.
57	Middle Bank Beacon.*	On the east bank of the river, about $2\frac{1}{4}$ miles above Nodding Tommy Beacon.	Red spar, mounted with a red spherical cage, 25 feet above high water.	Middle Bank Shoal, on the opposite side of the channel, bears about S.W. by W. $\frac{3}{4}$ W. from this beacon.
58	Flagstaff Beacon....	On dry ground on the east bank of the river, and 7 cables N.E. from Middle Bank Beacon.	Spar, 50 feet high, mounted with two diamond-shaped boxes. The spar is painted red from the ground to the bottom of lower box, white from thence to the bottom of upper mark, and the remainder red.	
59	Fish House Beacon	On the west bank of the river, near high water mark, and a short distance from the bend that leads to the harbour.	Black spar, 40 feet high, mounted with a black diamond-shaped box.	It marks the channel in crossing over from the east to the west bank of the river.

* These three beacons are removed every year, in the latter part of November, on account of ice in the river, and replaced as soon as practicable on the opening of navigation.

A. M. BISBEE,

Coast Inspector.

By Order of the INSPECTOR GENERAL,

E. McKEAN,

Statistical Secretary.

INSPECTORATE GENERAL OF CUSTOMS,
STATISTICAL DEPARTMENT,
SHANGHAI, *January 1891.*

APPENDIX I.

LIST OF FOREIGN LIGHTS STAFF.

No.	NAME.	Rank.	Date of first Appointment.	District or Section.
LIGHT-VESSELS.				
1	W. W. Orfeur	Captain	March 1880	Newchwang.
2	C. E. R. Handro	"	November 1882	Tientsin.
3	P. W. Rasmussen	"	October 1883	Shanghai.
4	L. R. Sachs	First Mate	July 1885	Shanghai.
5	C. Druwert	" "	November 1886	Tientsin.
6	G. Deitz	" "	March 1877	Newchwang.
LIGHTHOUSES.				
LIGHTKEEPERS.				
7	J. Noble	Chief, A	June 1877	Amoy.
8	J. Harp	" "	" "	Chefoo.
9	N. Smerdeley	" "	March 1869	Shanghai.
10	C. M. Peterson	" "	July 1872	Amoy.
11	T. Cunningham	" "	June 1877	Shanghai.
12	C. W. Bond	" "	" "	"
13	J. Eccles	Chief, B	June 1877	Chefoo.
14	P. F. S. Wilnau	" "	November 1879	Amoy.
15	D. Botelho	" "	December 1861	"
16	C. May	" "	July 1880	"
17	D. Wisas	" "	September 1875	Chefoo.
18	P. J. J. Stellingwerff	" "	February 1877	Amoy.
19	G. T. Hansel	" "	October 1885	"
20	G. E. von Pein	Second, A	April 1881	Amoy.
21	B. Lewis	" "	June 1877	Chefoo.
22	C. G. Soelberg	" "	April 1881	Amoy.
23	C. A. Schwilp	" "	September 1886	Chefoo.
24	W. Knight	" "	February 1878	Tientsin.

APPENDIX I—*Continued.*

No.	NAME.	Rank.	Date of first Appointment.	District or Section.
25	J. Chapman.....	Sécond, B.....	June 1878	Amoy.
26	J. S. de Elizaga.....	" ".....	December "	"
27	J. Shields.....	" ".....	August 1881	"
28	A. F. C. Penzig.....	" ".....	May 1882	Shanghai.
29	L. H. C. Kljhn.....	" ".....	January 1885	Amoy.
30	L. J. A. de Luz.....	Third, A.....	January 1878	Shanghai.
31	J. Bluhm.....	" ".....	March 1885	"
32	P. E. Johnsen.....	" ".....	" "	Chefoo.
33	D. Fernandez.....	" ".....	June 1878	Amoy.
34	A. M. dos Santos.....	" ".....	March 1882	"
35	E. E. Ferrari.....	" ".....	April 1884	"
36	J. Rodrigues.....	" ".....	August 1877	Shanghai.
37	H. A. Thorkelsen.....	" ".....	September 1887	"
38	F. R. Schulz.....	" ".....	" "	"
39	C. Nelson.....	" ".....	October "	"
40	H. A. Atkinson.....	" ".....	August 1885	Amoy.
41	F. H. Lucassen.....	" ".....	" "	"
42	T. O'Driscoll.....	" ".....	January 1887	"
43	G. Walsh.....	" ".....	February "	Shanghai.
44	F. Dalton.....	" ".....	March "	Chefoo.
45	H. P. T. Möller.....	" ".....	November "	Amoy.
46	C. L. Christiansen.....	" ".....	December 1888	"
47	J. H. Buntzen.....	" ".....	" "	"
48	B. R. Bohn.....	" ".....	April 1889	"
49	J. Wulf.....	Third, B.....	November 1889	Shanghai.
50	J. C. H. Schmäuser.....	" ".....	August 1888	Amoy.
51	P. H. Niner.....	" ".....	" "	"
52	J. C. Bruhn.....	" ".....	February 1890	"
53	H. J. Jacobsen.....	" ".....	" "	"
54	J. Lewis.....	" ".....	January "	Chefoo.
55	W. Perry [on probation].....	" ".....	October "	"
56	F. Geschkat.....	" ".....	December 1889	Shanghai.
57	P. McPherson [on probation].....	" ".....	March 1890	"
58	J. A. Biddle [on probation].....	" ".....	August "	"
59	C. L. Callaghan [on probation].....	" ".....	October "	"
60	F. W. E. Wichmann [on probation].....	" ".....	February "	Newchwang.

APPENDIX II.

LIST OF CHINESE LIGHTS STAFF.

No.	NAME.		Rank.	Date of first Appointment.	District or Section.
	In English.	In Chinese.			
	LIGHTKEEPERS.				
1	Liang Kuang.....	梁 光	Fourth, C	April 1880	Canton.
2	Lao Shih-wu.....	勞 十 五	" "	October 1881	"
3	Lao Tê	勞 德	" "	" "	"
4	Ch'ên Chin.....	陳 金	" "	November "	"
5	Ho Kao.....	何 高	" "	September 1882	"
6	Liang Yu-chin	梁 有 進	" "	December 1883	"
7	Su Ch'iao.....	蘇 喬	" "	February 1888	"
8	Chên Fu.....	陳 富	" "	July 1889	"
9	Chên Kên.....	陳 根	" "	August 1890	"
10	Ch'ên Kuan-hsiung.....	陳 觀 雄	" "	September 1879	Amoy.
11	Chuang A-k'un	莊 阿 坤	" "	November 1883	"
12	Hsü Hsi-mei.....	許 細 妹	" "	December 1879	"
13	Nien A-pa.....	念 阿 拔	" "	February 1880	"
14	Chêng A-tê.....	鄭 阿 得	" "	November 1876	"
15	Lin Ch'iu.....	林 求	" "	September 1871	"
16	Hung Hua	洪 華	" "	December 1880	"
17	Chi Hsiang	紀 响	" "	May 1881	"
18	Li Chi	李 吉	" "	" 1862	"
19	Li Tun.....	李 盾	" "	November 1878	"
20	Li Hsün	李 罍	" "	April 1883	"
21	Huang Chên.....	黃 振	" "	November 1871	"
22	Li Lai.....	李 來	" "	September 1877	"
23	Ch'ên Kuan-fu	陳 觀 富	" "	March 1888	"

APPENDIX II—Continued.

No.	NAME.		Rank.	Date of first Appointment.	District or Section.
	In English.	In Chinese.			
24	Huang Wei.....	黃 威	Fourth, C	March 1883	Amoy.
25	Hsü A-chui.....	許 阿 追	" "	November 1889	"
26	Chu Ch'ao-fu.....	朱 朝 富	" "	September 1888	"
27	Chu Ch'êng-chin	朱 成 進	" "	" 1882	"
28	Wu A-yin	吳 阿 印	" "	July 1888	"
29	Chu Chiang	朱 江	" "	August 1885	"
30	Ch'ên A-chien	陳 阿 賤	" "	September 1881	"
31	Li Ju.....	李 如	" "	April "	"
32	Chu Ho.....	朱 何	" "	January 1887	"
33	Hsü A-chiang	徐 阿 江	" "	April 1881	"
34	Lin Yu-lai.....	林 有 來	" "	May 1882	"
35	Lin A-chu.....	林 阿 猪	" "	February "	"
36	Chao Ch'un-piao	趙 春 標	" "	June "	"
37	Ch'ên I.....	陳 義	" "	July 1884	"
38	Shih Ts'un-hsin.....	釋 存 心	" "	February 1890	"
39	Hsü A-chu	許 阿 朱	" "	" 1884	"
40	Huang A-chêng.....	黃 阿 盛	" "	November 1889	"
41	Kuo Piao	郭 標	" "	July 1885	"
42	Li Yang.....	李 養	" "	December 1883	Takow.
43	Lu Ch'ing-ch'üan	盧 清 泉	" "	June 1886	"
44	Kuo Mao-shêng.....	郭 茅 生	" "	November 1888	Tamsui.
45	Huang Yu-lai.....	黃 友 來	" "	April "	"
46	Lin T'ung	林 桶	" "	July 1886	"
47	Lin Mu.....	林 木	" "	November 1890	"
48	Ch'ên Ch'ang-yung.....	陳 昌 榮	" "	April 1864	Ningpo.
49	Ku A-hsiao	顧 阿 小	" "	November 1873	"
50	Wu Ping-chiang	鄔 炳 江	" "	January 1875	"
51	Ku Chi-chang.....	顧 寄 章	" "	September 1877	"
52	Ch'ên A-ao	陳 阿 鰲	" "	— 1872	"

APPENDIX II—Continued.

No.	NAME.		Rank.	Date of first Appointment.	District or Section.
	In English.	In Chinese.			
53	Wang Chung-huai	王中懷	Fourth, C	August 1879	Ningpo.
54	Shih A-hsüan	史阿煊	" "	— 1867	"
55	Ting A-t'ang	丁阿堂	" "	August 1870	Shanghai.
56	Yao Ting-kuei	姚定貴	" "	April 1880	"
57	Ling Hsiao-fang	陵小芳	" "	June 1869	"
58	Yang Shun-chung	楊順忠	" "	May 1873	"
59	Hsü Kuang-shêng	徐光生	" "	February 1882	"
60	P'an Lung-ch'üan	潘龍泉	" "	April 1878	"
61	Yang Jui-chi	楊瑞吉	" "	August 1883	"
62	Ts'ao A-pao	曹阿寶	" "	January "	"
63	Lin A-san	林阿三	" "	June "	"
64	Fu Chih-shou	傅吉壽	" "	February 1877	"
65	Liu Hêng-ch'ün	劉恒欽	" "	January 1875	"
66	Shên Ta-shêng	沈大生	" "	July 1883	"
67	Sung A-hsiao	宋阿小	" "	" 1876	"
68	Yen A-san	嚴阿三	" "	September 1878	"
69	Chao Kuei-yün	趙貴云	" "	January 1883	"
70	Ch'ên A-fang	陳阿方	" "	June 1864	"
71	Liu Yin-kuei	陸銀貴	" "	September 1880	"
72	Shên Yün-yao	沈云姚	" "	January 1884	"
73	Liu A-kuei	陸阿貴	" "	February 1881	"
74	Fei Chin-pao	費金寶	" "	April "	"
75	Liu Kun-jung	陸坤榮	" "	March "	"
76	Lo Ssü-yo	羅四岳	" "	July 1883	"
77	Hung Wan-i	洪萬億	" "	February 1866	Chinkiang.
78	Yen Wei-ch'ün	嚴維春	" "	December 1886	"
79	Lu Hêng-i	陸恒義	" "	" 1870	"
80	Hsü Hung	徐洪	" "	July 1878	"
81	Ts'ui Tê-jung	崔得榮	" "	August 1867	"

APPENDIX II—*Continued.*

No.	NAME.		Rank.	Date of first Appointment.	District or Section.
	In English.	In Chinese.			
82	Ts'ui Hêng-fa	崔恒發	Fourth, C	November 1881	Chinkiang.
83	Shao Mei-ts'ai	邵美才	" "	" 1877	"
84	Wang T'ien-ts'ai	王天才	" "	February 1873	"
85	Wang Fu-ch'üan	王福泉	" "	January 1880	"
86	Ts'ai Wên-chên	蔡文鎮	" "	September 1887	"
87	Huang Tê-jung	黃德榮	" "	March 1869	"
88	Huang Shou-lan	黃壽蘭	" "	July 1881	"
89	Ts'ui Tê-fu	崔德福	" "	April 1873	"
90	Ku Yung-lin	顧永林	" "	June 1885	"
91	Ch'ên Yu-i	陳有義	" "	April 1875	"
92	Yü Tê-shui	虞德水	" "	August 1884	"
93	Hsü Yung-shêng	徐永生	" "	April 1881	"
94	Pu Liu-yüan	卜流源	" "	July 1878	"
95	Li Yü-nien	李玉年	" "	" "	"
96	Yang Tê-shun	楊德順	" "	June 1888	"
97	Ch'ên Hung-chün	陳宏鈞	" "	September 1890	"
98	Chou Tê-shêng	周德盛	" "	June 1879	"
99	Ts'ai Tsêng-fa	蔡增發	" "	December 1873	Kiukiang.
100	Hsing Chung-ping	邢忠炳	" "	July 1874	"
101	Ch'í Ch'un-jung	齊春榮	" "	March 1872	"
102	Wang Wu-shang	王伍尙	" "	November 1884	"
103	Hsü Tê-pao	徐得保	" "	June 1870	"
104	K'ó Ming-i	柯明義	" "	March 1885	"
105	Wu Hsio-lin	吳學林	" "	April "	"
106	Yü Tê-kuei	余得魁	" "	May 1886	"
107	Chang Liang-shan	張良善	" "	December 1885	"
108	Chang Yu-fu	張佑富	" "	November 1889	"
109	Wang Lung-hai	王龍海	" "	May 1876	"
110	Tsui Li-chang	崔禮昌	" "	October 1889	"

APPENDIX II—Continued.

No.	NAME.		Rank.	Date of first Appointment.	District or Section.
	In English.	In Chinese.			
111	Wu Ching-nien.....	吳慶年	Fourth, C	April 1889	Kiukiang.
112	Wang Ch'üan-chin	王全金	" "	May 1887	"
113	K'ung Hsien-i.....	孔憲義	" "	January 1877	"
114	Chao Ta-chiu	趙達九	" "	June 1870	"
115	Li Cho-lün.....	李著倫	" "	May 1885	"
116	Chang Su-k'un.....	張述坤	" "	October 1872	"
117	Wu Pên-hsin.....	吳本信	" "	June 1885	"
118	Wan Ting-hsien.....	萬鼎先	" "	April 1872	"
119	Wan Yü-hai.....	萬裕海	" "	March 1885	"
120	Kuei Ch'un-ying.....	桂春迎	" "	June 1876	"
121	Liang I-fang.....	梁儀芳	" "	November 1889	"
122	Li Hsün-lin	李訓林	" "	January 1884	"
123	Wan Yü-huai.....	萬裕淮	" "	December 1888	"
124	I Sui-hai.....	易綏海	" "	April 1890	"
125	Wan Shih-li.....	萬時利	" "	" 1885	"
126	Chou Tsung-huai.....	周宗淮	" "	July 1890	"
127	Wang Ching-fa.....	王慶發	" "	September 1884	"
128	T'ien Fang-chin	田方金	" "	July 1876	Hankow.
129	Ch'ên T'ai-ao	陳太鰲	" "	September 1877	"
130	Liu Chung-lin	劉忠林	" "	April 1862	"
131	Liu Hsio-ch'ing	劉學慶	" "	February 1879	"
132	Shih Hsing-wan	施興萬	" "	January 1869	"
133	Kao Hsing-ch'i.....	高興起	" "	December 1882	"
134	Liu Pi-ch'ang.....	劉必昌	" "	July 1869	"
135	Li Hsi-yüan	李喜元	" "	" 1883	"
136	Chang Hsio-shih	張學詩	" "	April 1879	"
137	Liu Chêng-ch'ien	劉正乾	" "	" "	"
138	Li Chêng-i.....	李正義	" "	September 1885	"
139	Kung Tso-ying.....	龔作英	" "	January 1882	"

APPENDIX II—Continued.

No.	NAME.		Rank.	Date of first Appointment.	District or Section.
	In English.	In Chinese.			
140	Chang Lao-yao	張老么	Fourth, C	December 1873	Hankow.
141	Wang Ming-shan	王明善	" "	October 1883	"
142	Chang Nien-pao	張年寶	" "	" 1871	"
143	Chu Chêng-yu	朱正有	" "	February 1863	"
144	Kuo Yu-kuei	郭友貴	" "	April 1872	"
145	Huo Yü-ch'ing	霍裕慶	" "	November 1884	"
146	I Ming-yüan	易明元	" "	December 1885	"
147	Ch'ü Hsiang-t'ien	曲香田	" "	March 1879	Chefoo.
148	Chi Ming-shui	紀明水	" "	January 1882	"
149	Jên Ch'üan-kuei	任全桂	" "	April 1866	"
150	Lü K'o-hsio	呂克學	" "	December 1885	"
151	Ch'ü Shu-t'ien	曲書田	" "	August 1882	"
152	Wang A-to *	王阿多	" "	June 1884	"
153	Mu Hsiang-ho *	慕香和	" "	September 1871	"
154	Ting Wên-yüan	丁文元	" "	May "	"
155	Ch'ih Ch'ing-ling	遲慶令	" "	August 1879	"
156	Chou Yung-hai	周永海	" "	November 1883	"
157	Wang Tso-ying †	王左英	" "	September 1885	"
158	Chang Ch'ing-fu †	張慶福	" "	March 1886	"
159	Chou Yung-chih	周永智	" "	August 1889	"
160	Sun Kuei	孫桂	" "	May 1861	Tientsin.

* Engineer and Lightkeeper.

† Fireman.

APPENDIX III.

MEMORANDUM ON THE TIDES AT THE SOUTHERN ENTRANCE TO THE
YANGTZE AND ON THE WOOSUNG INNER BAR.

I.

THE following information regarding the Tides in the vicinity of the *Tungsha* Lightship is derived from observations taken by the master of that vessel, and extending over a period of five months, from 1st May to 30th September.

It is high water, full and change, at the *Tungsha* Lightship at 11h. 36m. The extreme spring rise is 16 feet, and the greatest range observed between two consecutive tides was 14 feet. Neaps rise 11 feet, and their average range is 8 feet. The smallest range observed between two consecutive tides was 6 feet. The tides at the entrance to the Yangtze are rotatory; but, as shown by the following table, the set of the stream for any particular hour of the tide, except the last quarter of the flood or ebb, varies greatly, and this without any peculiar circumstances of wind or weather being apparent.

TABLE showing the DIRECTION and VELOCITY of the TIDAL STREAM at the
"TUNGSHA" LIGHTSHIP.

TIME OF TIDE.	SPRING TIDES: DIRECTION OF STREAM.	AVERAGE VELOCITY.	NEAP TIDES: DIRECTION OF STREAM.	AVERAGE VELOCITY.
		<i>Knots.</i>		<i>Knots.</i>
At high water.....	N.W. by W. to N.W. by N.	1 $\frac{5}{10}$	W.N.W. to N.W. by N.	1
1st hour ebb	N.N.W. to N.E.	1 $\frac{0}{10}$	N.W. to N. by E.	1 $\frac{0}{10}$
2nd „ „	N.E. to E. by S.	1 $\frac{3}{10}$	N. to E.	1
3rd „ „	E. by N. to E.S.E.	2 $\frac{2}{10}$	N.E. to E.S.E.	1
4th „ „	E.S.E. to S.E.	2 $\frac{8}{10}$	E. to S.E. by E.	1 $\frac{7}{10}$
5th „ „	S.E. by E. to S.E.	3 $\frac{6}{10}$	E.S.E. to S.E.	2 $\frac{2}{10}$
6th „ „	S.E.	3 $\frac{2}{10}$	S.E. by E. to S.E.	2 $\frac{1}{10}$
At low water.....	S.E.	2 $\frac{5}{10}$	S.E. to S.S.E.	1 $\frac{7}{10}$
1st hour flood	S.E. to S.W.	1 $\frac{5}{10}$	S.E. by S. to S.W.	1 $\frac{2}{10}$
2nd „ „	S.W. to W.N.W.	1 $\frac{5}{10}$	S. to W. by S.	1 $\frac{3}{10}$
3rd „ „	W.N.W. to N.W. by W.	2 $\frac{1}{10}$	W.S.W. to W.N.W.	1 $\frac{5}{10}$
4th „ „	W.N.W. to N.W.	2	W.N.W. to N.W.	1 $\frac{3}{10}$
5th „ „	N.W. by W. to N.W.	1 $\frac{6}{10}$		

The ebb runs strongest during the fifth and sixth hours. The greatest velocity noted during springs was 5 knots, and during neaps $3\frac{1}{4}$ knots. The flood runs strongest during the third and fourth hours. The greatest velocity noted during springs was 3 knots, and during neaps 2 knots. Between the *Tungsha* Lightship and Woosung the tides are considerably stronger in the navigable channel, owing to the water being confined within narrower limits by the banks. With the wind fresh from the southward, the ebb tide in the vicinity of the *Tungsha* Lightship, and for a considerable distance farther to the eastward, sets to the northward of east much longer than under other circumstances; but with a fresh northerly wind, the opposite of this is the case. The tide falls, on an average, for seven hours during both springs and neaps, and rises for five hours.

2.

The following information regarding the tides at Woosung is derived from the records of the Harbour Master's Office at that place.

The average time of high water, full and change, on the Woosung Inner Bar is 0^h. 40^m. Under ordinary circumstances, the average daily difference in the time of high water at Woosung is as follows:—For the first 7 days after new moon, 40^m., increasing to 50^m. on the 8th day and 1^h. 40^m. on the 10th, then decreasing to 50^m. on the 12th and 40^m. from the 12th to the 22nd, again increasing to 1^h. 40^m. on the 24th, and then diminishing to about 20^m. on the day before new moon. The greatest irregularity in the daily difference occurs on the first, second, and third days after the moon's quartering; and it has been known, under exceptional circumstances of weather, to be nearly four hours.

The tides are much influenced by the wind; the flood making sooner, rising higher, and running longer than usual with the wind fresh between N.E. and E., whilst with the wind strong from N. to N.W. and W. the opposite is the case in each of these respects, the ebb running longer and the water falling lower.

No fixed rule can be laid down regarding the day of the moon on which the highest or lowest tide may be expected. The highest tide often occurs on the third day after full and change, but it frequently happens on the second day after; more rarely on the first, and occasionally on the day of full or change. A similar irregularity is apparent as regards the extreme neap tides (*i.e.*, those which give the least depth at high water) with reference to the time of the moon's quartering.

Considerable improvement has taken place in the depth of water on the Woosung Inner Bar since 1883, as will appear from a comparison of the appended tables and diagrams—based on the records for the four years ended 31st December 1887—with those published in the Lists for 1885, 1886, and 1887, which were made up from the observations noted during the five years ended 31st December 1883.

The Woosung Inner Bar silts up during certain months of the year, and cuts away during others, with considerable regularity, as the following table will show, the depths given being reckoned from an established level of low water at lowest spring tides.

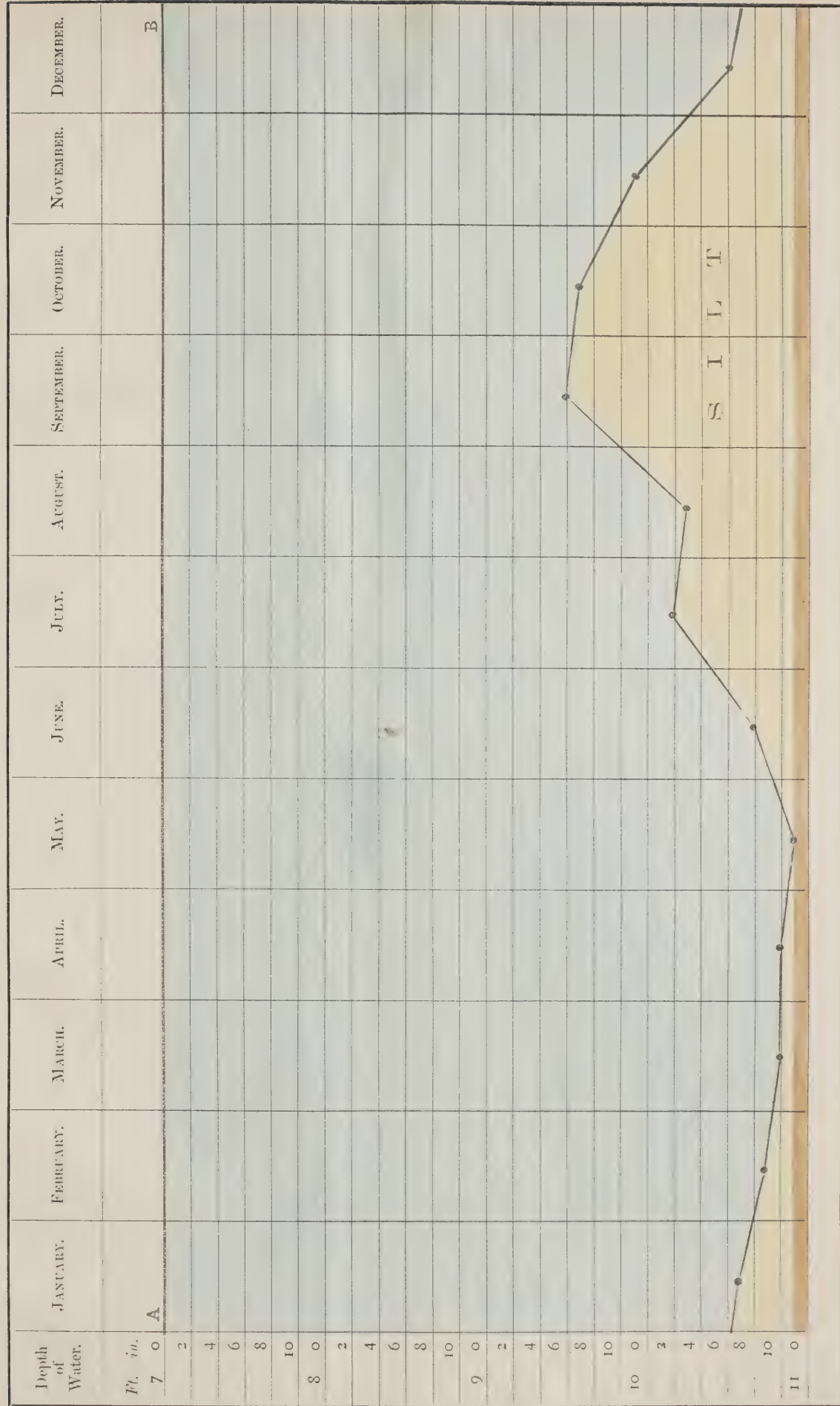
TABLE A.

DEPTH of WATER on the WOOSUNG INNER BAR at LOW WATER SPRING TIDES
for the Four Years ended 31st December 1887.

YEAR.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
	<i>Ft. in.</i>	<i>Ft. in.</i>	<i>Ft. in.</i>	<i>Ft. in.</i>	<i>Ft. in.</i>	<i>Ft. in.</i>	<i>Ft. in.</i>	<i>Ft. in.</i>	<i>Ft. in.</i>	<i>Ft. in.</i>	<i>Ft. in.</i>	<i>Ft. in.</i>
1884.....	10 0	10 0 to 10 6	10 6	10 6	10 6	10 0 to 9 6	9 0	9 0	8 6	9 0 to 10 0	10 0	10 6
1885.....	10 6	10 6	10 6	10 6	10 6	10 6 to 10 0	10 0 to 9 0	9 0	9 0	9 0	9 0 to 9 6	9 6 to 10 0
1886.....	10 0	10 0 to 10 4	10 4	10 4 to 11 0	11 0 to 10 9	10 9	10 9	10 9 to 9 9	9 9 to 9 6	9 6 to 10 0	10 0 to 10 6	10 6
1887.....	10 6	10 6 to 10 9 11 9 to 12 0	10 9	In March of this year the position of the range marks for crossing the bar was shifted, owing to a change in the direction of the channel, and the depths on the old range are therefore not included in the averages.				12 0 to 11 0	10 6 to 11 0	11 0 to 11 6	11 6 to 11 9	11 9
Average depths to nearest inch	10 7	10 9	10 10	10 10	10 11	10 8	10 2	10 3	9 6	9 7	9 11	10 6

DIAGRAM No. 1.

DIAGRAM (illustrating TABLE A.) showing the PERIODICAL MOVEMENT of SILT, and the AVERAGE DEPTH of WATER on the WOOSUNG INNER BAR (at LOW WATER SPRING TIDES) during each Month of the Year.



A B represents a level 7 feet below the level of low water at lowest spring tides.

DIAGRAM No. 2.

DIAGRAM (illustrating TABLE B.) showing the AVERAGE DEPTHS of WATER at HIGH WATER on the WOOSUNG
INNER BAR at the HIGHEST SPRING TIDES.

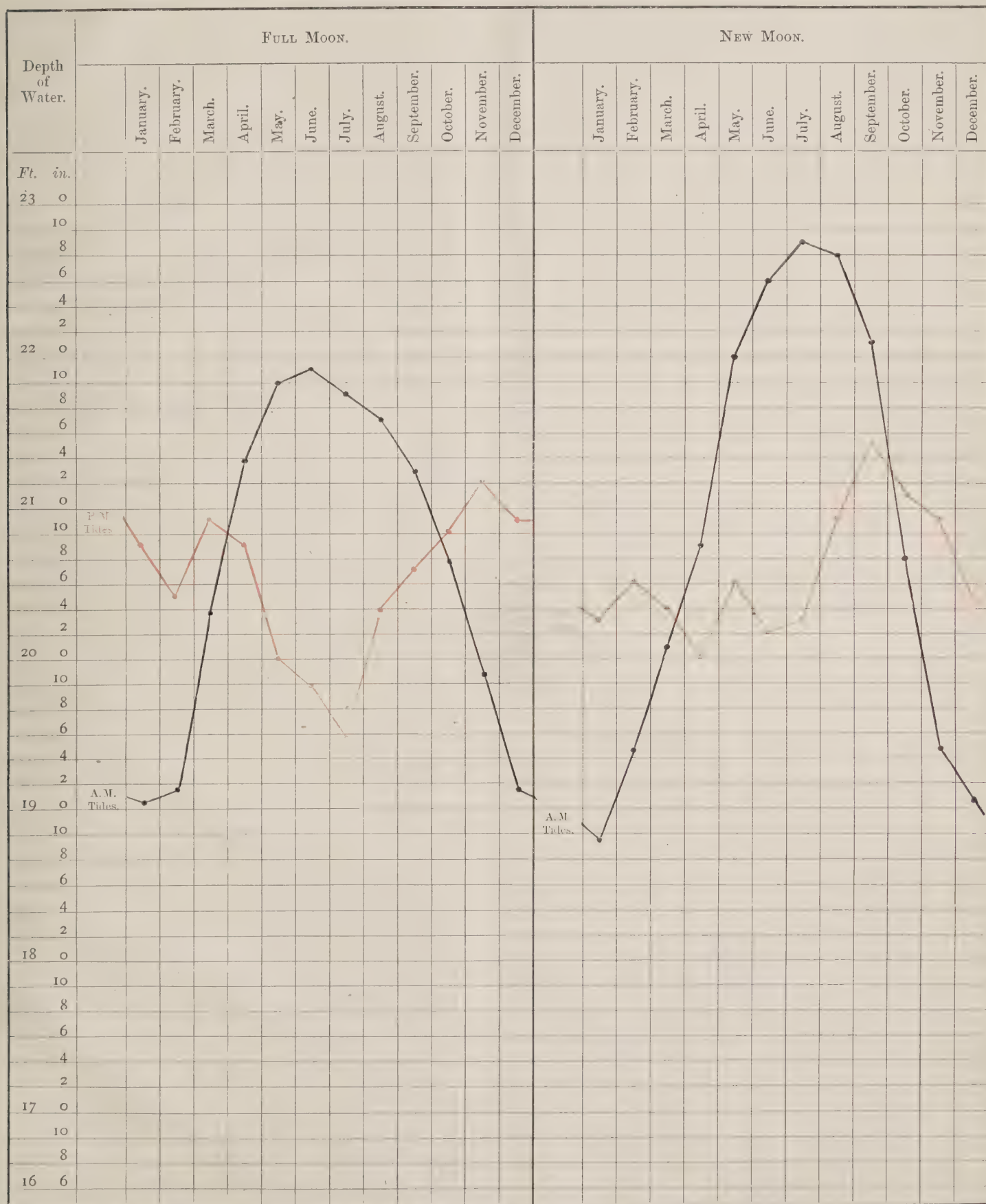


DIAGRAM No. 3.

DIAGRAM (illustrating TABLE B.) showing the AVERAGE DEPTHS of WATER at HIGH WATER on the WOOSUNG
INNER BAR at the LOWEST NEAP TIDES.

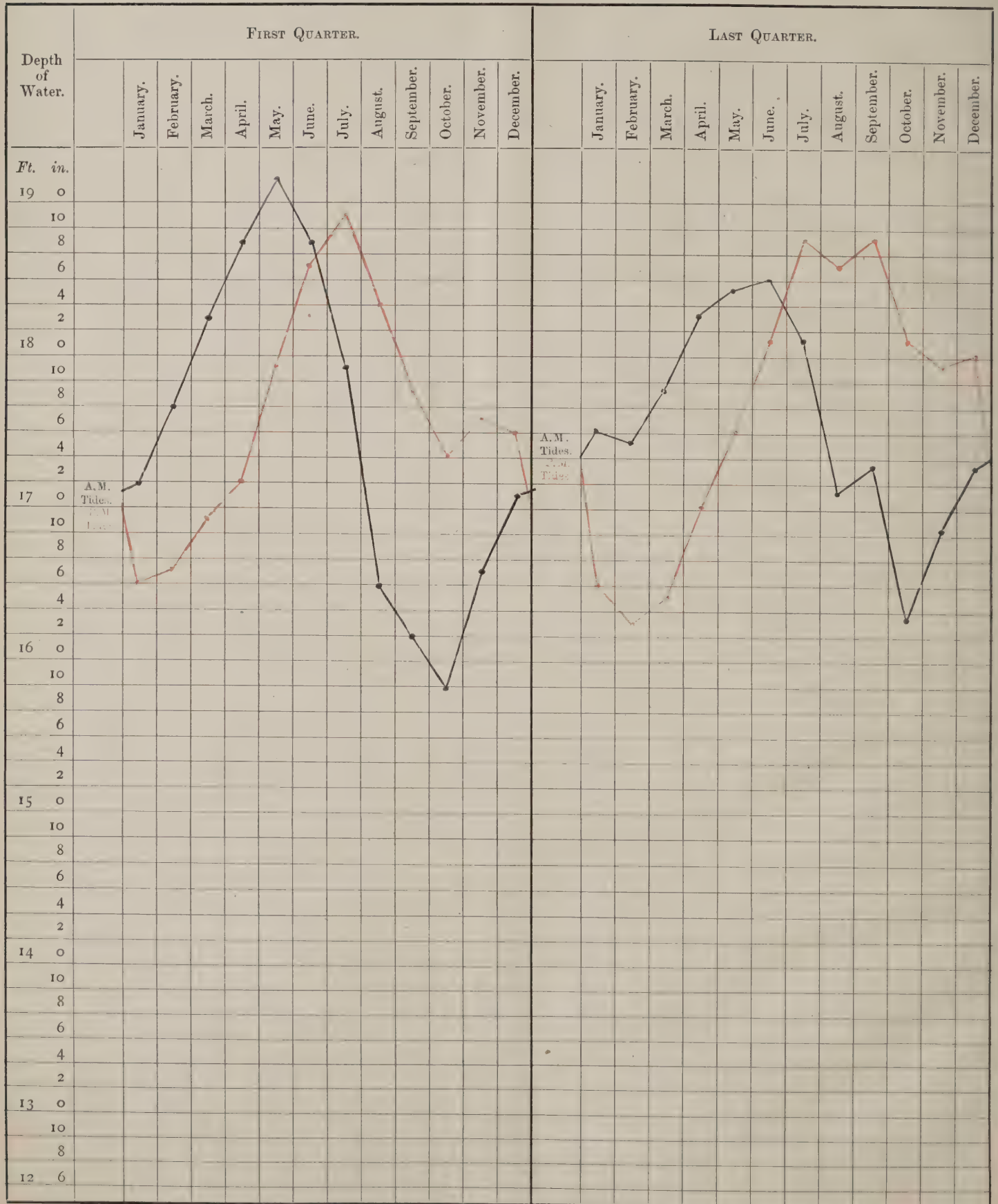


Diagram No. 1 shows that the bar is generally at its lowest level during the months of February, March, April, and May, and that the deposit of silt causes it to rise from early in May until September, when it begins to cut away. It has been observed, however, that when much rain falls during the spring and summer in the region traversed by the Huangp'u, the velocity of the ebb tide is much increased, and there is a proportionately smaller deposit of silt on the bar, whilst the opposite is the case during what is considered a dry season.

The highest spring tides of the year usually occur in the month of August; the greatest and least depths at high water on the inner bar that have ever been recorded were respectively $25\frac{1}{2}$ feet and $13\frac{1}{2}$ feet.

The depth of water on the bar does not, as has already been shown, depend altogether on the rise of tide, and it is therefore difficult to lay down any general rule as to what depth may be expected at any particular time. The following table may, however, be accepted as a pretty correct guide in this respect:—

TABLE B.

Showing the AVERAGE DEPTHS of WATER at HIGH WATER on the WOOSUNG INNER BAR at the HIGHEST SPRING TIDES and at the LOWEST NEAP TIDES.

MONTH.	SPRING TIDES.				NEAP TIDES.			
	Full Moon.		New Moon.		First Quarter.		Last Quarter.	
	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
	<i>Ft.</i>	<i>in.</i>	<i>Ft.</i>	<i>in.</i>	<i>Ft.</i>	<i>in.</i>	<i>Ft.</i>	<i>in.</i>
January	19	1	20	9	18	10	20	3
February	19	2	20	5	19	5	20	6
March	20	4	20	11	20	1	20	4
April	21	4	20	9	20	9	20	0
May	21	10	20	0	22	0	20	6
June	21	11	19	10	22	6	20	2
July	21	9	19	6	22	9	20	3
August	21	7	20	4	22	8	20	11
September	21	3	20	7	22	1	21	5
October	20	8	20	10	20	8	21	1
November	19	11	21	2	19	5	20	11
December	19	2	20	11	19	1	20	5

TABLE C.

Showing the MONTHS during which A.M. and P.M. TIDES are HIGHEST.

FULL MOON.		NEW MOON.	
A.M.	P.M.	A.M.	P.M.
April.	January.	April.	January.
May.	February.	May.	February.
June.	March.	June.	March.
July.	October.	July.	October.
August.	November.	August.	November.
September.	December.	September.	December.
FIRST QUARTER.		LAST QUARTER.	
A.M.	P.M.	A.M.	P.M.
January.	July.	January.	July.
February.	August.	February.	August.
March.	September.	March.	September.
April.	October.	April.	October.
May.	November.	May.	November.
June.	December.	June.	December.

TABLE D.

Showing the AVERAGE NUMBER of TIDES giving certain DEPTHS at HIGH WATER on the WOOSUNG INNER BAR, from 18 Feet and upwards, for each Month of the Year.

MONTH.	Tides of 18 Feet and upwards.	Tides of 19 Feet and upwards.	Tides of 20 Feet and upwards.	Tides of 21 Feet and upwards.	Tides of 22 Feet and upwards.	Tides of 23 Feet and upwards.
January.....	40	23	8	2	...	...
February.....	35	22	6	2	...	...
March.....	46	33	20	6	1	...
April.....	50	38	23	9	2	...
May.....	52	43	27	13	5	1
June.....	50	39	27	16	8	3
July.....	50	39	26	17	8	4
August.....	49	40	26	17	8	5
September.....	47	38	26	14	5	1
October.....	41	31	20	11	4	...
November.....	38	26	15	6	1	...
December.....	40	27	12	4	1	...
TOTAL.....	538	399	236	117	43	14

During spring tides the ebb begins to run at Woosung from $1\frac{1}{2}$ hours to 2 hours after high water, and during neap tides from $1\frac{3}{4}$ hours to $2\frac{1}{2}$ hours after high water. The flood commences to run during springs from 20 to 40 minutes after low water, and during neaps from 1 hour to $1\frac{1}{2}$ hours after low water. The tides set up, and down, along both banks of the river respectively, before the flood or ebb begins to run in mid-channel. During springs the tide falls for about $8\frac{1}{4}$ hours, and rises about 4 hours; and during neaps it falls for about $7\frac{1}{2}$ hours, and rises for $4\frac{3}{4}$ hours.

A. M. BISBEE,

Coast Inspector.

COAST INSPECTOR'S OFFICE,

SHANGHAI, *January* 1888.

III.—MISCELLANEOUS SERIES.

No. 1.—THE TARIFF TABLES : First Issue	Published 1868.
„ 2.—TEN YEARS' STATISTICS.....	„ 1873.
„ 3.—VIENNA EXHIBITION CATALOGUE.....	„ 1873.
„ 4.—PHILADELPHIA EXHIBITION CATALOGUE.....	„ 1876.
„ 5.—PARIS EXHIBITION CATALOGUE.....	„ 1878.
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